

Users at PC Expo greet NetPC with half-open arms and get Memphis update, pages 6 and 12

Tivoli scrambles to answer user complaints about complexity and service. The Enterprise Network, page 53

COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com

June 23, 1997 • Vol. 31 • No. 25 • 148 pages • \$3/Copy \$48/Year

Sun to link banks via Java

► Web road map to tie legacy apps, stock traders

By Thomas Hoffman

SUN MICROSYSTEMS, INC. this week will unfurl a plan designed to help banks and brokerages tie together all their financial services via a World Wide Web-enabled architecture.

The Sun Connect architecture is essentially a set of middle-

ware products based on Sun technologies such as Java and JavaBeans. Sun will introduce the road map at this week's Securities Industry Association Information Management Conference & Exhibit in New York.

Sun Connect is Java's first significant foray into a vertical industry, combining Internet con-

tent with security needs. There is a strong business case for Java and thin-client computing in areas such as retail branch banking, where big banks typically deploy hundreds of high-cost PCs to loan officers, tellers and other employees.

"If you can save 10% to 20% on PC costs with thin clients, that makes a significant differ-

Sun, page 16

Year 2000 muck mires midrange

► Key obstacles: old code, lack of skills and tools

By Jaikumar Vijayan

IF YOU THOUGHT you had year 2000 problems on the mainframe, just wait until you check out some of your older midrange systems.

Those machines are vulnerable to all the problems of the

mainframe, but there are even fewer tools and skilled people to help fix them. What's more, many of the vendors that developed packaged software for those platforms no longer exist.

"Midrange users need a year 2000 wake-up call," said Brian Richardson, an analyst at Meta

Group, Inc. in Stamford, Conn. "They are at least six months to one year behind mainframe shops in awareness of the problem, and they are handicapped by more issues."

Midrange systems such as Digital Equipment Corp.'s VAX/VMS systems, Data General

Year 2000, page 103

Bug payment spat sparks debate on Internet altruism

By Sharon Machlis

TO SOME, it was fair compensation for helping to fix a commercial software product. To others, it bordered on blackmail.

Two Danish consultants dickered with Netscape Communications Corp. over payment as a prerequisite to turning over details of a security hole they found two weeks ago in that company's browsers. It was the most publicized departure yet from a model that has existed since the dawn of the Computer Age: If you find a bug, you report it for the greater good, not financial reward.

Some in the Internet community took a dim view of the effort to wring money out of a vendor

Bug, page 103

INSIDE THIS ISSUE GUIDE IN A SOFTWARE MAZE

User group seeks answers to license puzzle. Page 2

PALMER UNDER THE GUN

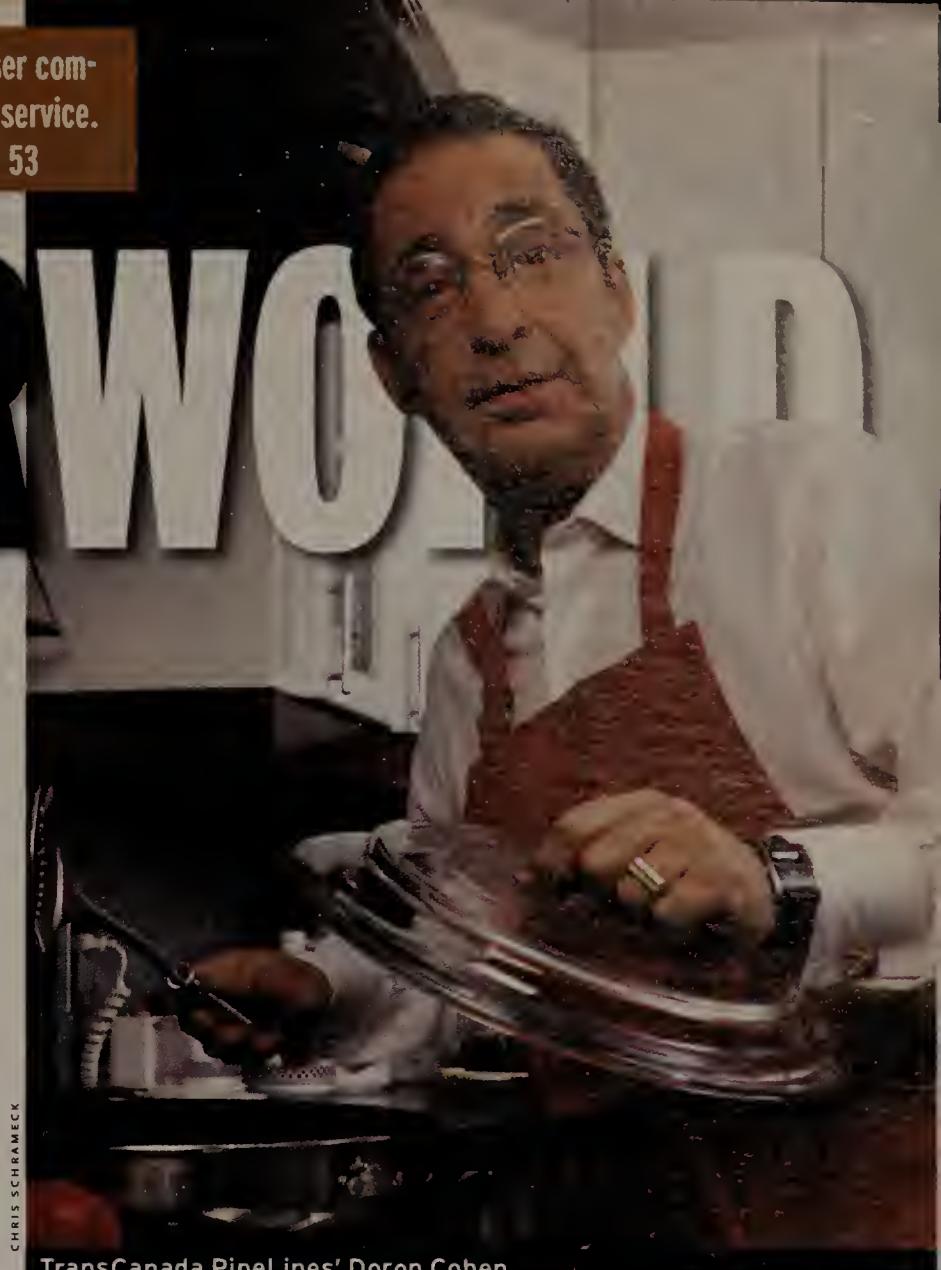
Digital chief defends Alpha strategy and Intel suit. Page 4

NT prices ... going up

Enterprise Edition may cost twice as much as NT 4.0. Page 6

ORACLE LIGHT ON TOOLS

Users get answers on component development plans. Page 12



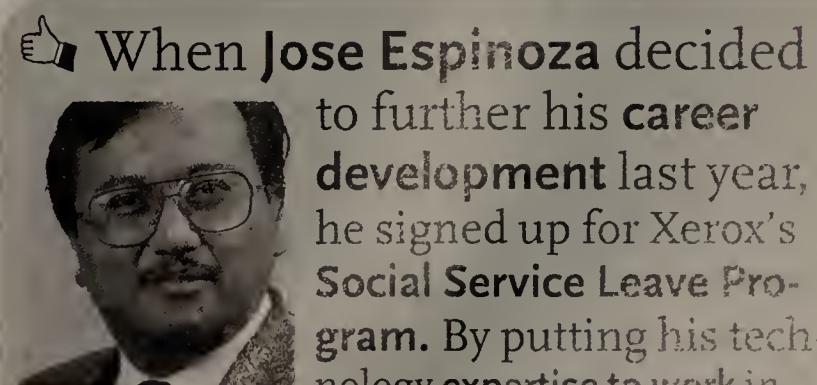
TransCanada PipeLines' Doron Cohen

IS chief cooks up nouveau tech recipe

DORON COHEN, IS chief at TransCanada PipeLines Ltd., unplugged mainframes in favor of client/server technology and helped transform the sleepy utility into an aggressive, \$11 billion competitor.

But now he finds that the business is growing and changing so fast, even client/server development cycles can't keep up. So Cohen is speeding things up with Web-enabled applications, reusable components and "disposable databases," while trying to keep IS focused on the business.

Managing, page 69



When Jose Espinoza decided to further his career development last year, he signed up for Xerox's Social Service Leave Program. By putting his technology expertise to work in his community, Espinoza gave back to the neighborhood, gave his heart a workout and returned to his company with newfound leadership skills.

UP FRONT

Killing the NC

In a striking display of pre-emptive marketing, PC industry leaders gathered in New York last week and tried to drive a stake through the heart of the network computer (NC).

Their weapon of choice: The NetPC. Conceived in desperation last fall and dribbled out in keynote speeches and press releases ever since, the NetPC is a lame comeback at the vision of the super-thin client painted by Sun and Oracle.

From what was shown last week, it's hard to tell the difference between a NetPC and a standard PC with duct tape over the floppy drive. One model even offered the option of a 2G-byte disk. The distinction apparently will be the forthcoming systems management software that somebody will think about getting around to later this year — if they have the time.

That pretty much sums up the PC industry's reaction to the thin-client concept: Bomb the market with white papers and intentions for announcements, then hope the whole thing will go away. They've even come up with a new term — Managed PC — that gets the dreaded "network" word out of the title.

Make no mistake about it, PC makers don't want you to buy a NetPC. Having shown prototypes last week,

these companies will now proceed to develop and market these devices with the enthusiasm usually reserved for road-kill. The PC industry hates thin clients. It hates anything that disrupts the endless cycle in which big PCs lead to big software which leads to demand for even bigger PCs.

The industry has now reluctantly turned its attention to the mundane cost-of-ownership issue that customers have known about for years. Last week's NetPC rollouts surely demonstrated that PC makers will bring as little creativity as possible to the process.

PC makers don't want you to buy a NetPC.

Paul Gillin, Editor
Internet: paul_gillin@cw.com

THE FIFTH WAVE

BY RICH TENNANT



"I DON'T KNOW - SOME PARTS OF THE NETWORK SEEM JUST FINE, AND OTHER PARTS SEEM TO BE COMPLETELY OUT OF CONTROL."

Guide seeks price plan

► User group tries to standardize licensing

By Tim Ouellette

ONE USER GROUP'S attempt to standardize software contracts, from mainframes to desktops, may give users a chance to piece together the software license jigsaw puzzle found at most large businesses.

The idea, according to leaders at the Guide International Corp. user group, is to combat rising software costs, winnow the wild variation in license types, terms and definitions currently in vogue among vendors, and spur vendors to adopt clearer usage-based licensing policies.

Guide's advocates said doing this could save some users millions of dollars by cutting out ineffective applications and unused licenses. But a lot depends on how many vendors actually buy into the concept.

For example, Rory Dowler, supervisor of MIS operations at Ottawa Hydro, said moving to a more powerful mainframe will increase the Ottawa utility's annual software costs by about \$42,000 because the licenses are based on engine size, not application usage.

"I cannot see how I can get a \$42,000 performance improvement out of the new machine to make up for it," Dowler said.

Guide, a 1,100-member IBM large systems user group in Chicago, is spearheading a project to create a framework, called License Use Management, that does the following:

- Lets users focus on development issues, not tracking tools.
- Lets tools capture data from any platform or vendor.
- Lets users choose applications based on need, instead of what monitoring tool works with their software.
- Gives users flexibility in license negotiations.

By September, Guide hopes to deliver a specification for software license management that clearly defines traditional license jargon and standard ways to track software use.

Major large systems software vendors such as IBM, Boole & Babbage, Inc., Compuware Corp. and Novell, Inc. are working with Guide on the standard, although desktop vendors must also be included.

"We have to do a better job of managing software costs, and

that means managing licenses," said Wynn Pope, an information systems manager at a large manufacturing firm and a participant in Guide's License Use Management project.

Now, many IS departments are left scrambling to monitor the mess, with a large number of sites unclear as to what software they have, what they are paying for and what they actually need, especially for their desktop systems [CW, June 9].

So far, the effort has been backed by mainframe-class software vendors, but the group plans to seek participation in the framework by others, including desktop vendors.

CROSS-PLATFORM TOOLS

Although monitoring tools exist today, they don't cover all platforms and application types and can often help only if users are under a specific type of licensing deal, according to a Guide requirements document.

For example, Blue Cross/Blue Shield of Minnesota expects to save more than \$1 million, thanks to a software monitoring tool from Isogen Corp. in New York. But the tool only checks usage for mainframe-based applications.

And some large user sites have begun dabbling in IBM's mainframe clustering scheme called parallel sysplex to lower software costs. But there is still work to be done in setting up and maintaining the cluster, and not all vendors have yet optimized their packages to run in a cluster environment.

The Guide specification will give users a consistent way to track usage across different platforms — from mainframes to PCs — without restricting them to a specific kind of license structure, said Jim Lackey, an IS manager at a large government agency and head of the Guide project.

Software vendors will have to build hooks and identifying codes into their products that will allow the applications to be tracked separately. Complying license management tools can then monitor any applications that comply with the standard.

But some observers said the ball is still in the vendors' court.

"IBM still lets model groups [with licenses based on the size of a machine] exist, so people are force-fitting systems to get at certain software pricing levels," said Carl Greiner, an analyst at Meta Group, Inc. in Stamford, Conn.

Greiner said he doesn't expect companies such as IBM to completely do away with machine-based licenses until at least next year, although piecemeal efforts are already on the way from some vendors [CW, March 31].

Others said Guide's efforts are a way to spur vendors to move from machine-based to usage-based pricing.

"Usage-based pricing is critical [to lower mainframe software costs], but we haven't had the infrastructure to do it yet," which this project could provide, said Karen Cone, an analyst at Gartner Group, Inc. in Stamford, Conn.

As with any standards effort, analysts are skeptical about fast acceptance from the market. The trick will be to get as many vendors as possible onboard, and Guide is counting on large user sites to help force vendors' hands.

"We are working with large sites like AT&T Corp. to get them onboard, to help us push vendors," Lackey said.

For example, Lackey said his agency won't deal with vendors that don't work within the License Use Management framework. "Once the standard is in place, we will have a policy that all our software vendors must comply with it," Lackey said. □

Come visit our Web site @ Computerworld

- **TASK MASTERS:** IS professionals who master the politics of project management can give their careers a major boost. IS placement executive Lina Fafard explains how. (www.computerworld.com/careers)
- **PUSHING THE (VIRTUAL) ENVELOPE:** @Computerworld takes the information in Computerworld just a little further. This week, you'll find resources, links and text that add a new dimension to our stories on TransCanada's Doron Cohen, the IT revolution at McGraw-Hill and employment opportunities in Connecticut. (www.computerworld.com)

Big Blue to boost AS/400's flexibility

► Wireless support and more robust terminal emulation added

By Bob Wallace

IBM WILL SOON make available a raft of new devices and enhancements that can greatly expand the flexibility of the AS/400 through more robust terminal emulation and wireless support.

By boosting the versatility of the AS/400 — about 425,000 of which are in use today — IBM will let users squeeze even more value and performance out of the system.

Bill Terrell said he is excited about wireless support for the AS/400.

"We've got a lot of concrete and steel in here, and wireless technology means we don't have to worry about knocking any down to run wires," said Terrell, chief information officer at Kennebec Valley Health in Augusta, Maine. "The name of the game in patient care is mobility, and wireless enables that."

LOOK, NO WIRES

New versions of IBM's Portable Transaction Computer Models 5SO, 5LO, DSO and DLO will let mobile users access AS/400s without wires. When the machines are equipped with a new

terminal emulation program, users can access Ethernet and Token Ring LANs.

For users who need to link two or more Token Ring LAN segments without wiring, IBM plans the 2480 Token-Ring LAN Bridge Access Point.

IBM also plans three new adapter cards — the 5250 Express ISA Adapter, PCI Adapter and PC Card — that can provide four times the throughput (1M bit/sec. to 4M bit/sec.) for

"We've got a lot of concrete and steel in here, and wireless technology means we don't have to worry about knocking any down to run wires."

— Bill Terrell, Kennebec Valley Health

terminal emulation compared with current models.

Each can support seven AS/400 sessions, rather than two. The cards also fit older

System/36 and System/38 minicomputers, about 100,000 of which are still in use.

IBM will also come out with the 7299 Express Hub for AS/400, which conserves ports on the AS/400 by using only one port and letting as many as 14 desktops connect through it. But some models can be used only for short distances.

IBM also plans to increase user access to host information with the 5250 Express Program Version 4.0 for PCs.

When used with the new adapter cards, it provides up to seven concurrent sessions to AS/400, AS/400 Advanced 36 or System/36 hosts. □

Internet team cracks 56-bit encryption code

By Sharon Machlis

IN WHAT may be the largest nongovernment computing effort ever mounted over the Internet, an ad hoc team using thousands of far-flung computers cracked a message coded with a government-standard encryption method.

That encoding scheme, 56-bit Data Encryption Standard (DES), is used by many financial institutions and government agencies to safeguard information sent across networks. The decoding effort lasted four months.

"I don't think people have to panic, but it's time to consider how we are transmitting and protecting our data," said Rocke

Verser, a contract programmer in Loveland, Colo., who wrote the software used in the decoding effort.

Verser launched the project in response to a \$10,000 challenge issued by RSA Data Security, Inc., an encryption software vendor in Redwood City, Calif. At its peak, the code-cracking effort involved 14,000 computers checking into Verser's server each day to get a batch of 56-bit keys to check.

The "brute-force" attack involved trying every key possibility to read the message — and at 56 bits, there are more than 72 quadrillion of them (72 followed by 15 zeros). A programmer in Salt Lake City using a 90-MHz Pentium PC found the correct key after less than 25% of the potential combinations were attempted.

The financial industry uses a better implementation of DES than that used in the challenge, said Kawika Daguo, a payment systems expert at the American Bankers Association in Washington. "At a minimum, it makes any attack at least twice as hard," he said.

In addition, Daguo said the Federal Reserve uses "triple DES" with 112-bit keys for some transactions. The Fed also has a plan to move all its data to the stronger format, as does the financial industry at large. But millions of card-swipe devices still use the 56-bit coding and

don't change their keys regularly, he said.

Critics of Clinton administration encryption policies, including RSA, cited the decoding as proof that U.S. companies must be allowed to export stronger encryption software without strings attached.

HARD TO COPY

But other observers noted that it wouldn't be easy for an illegal effort to duplicate Verser's successful decoding, because the work of Verser's team was quite public and because the average hacker doesn't have access to thousands of desktop machines.

Verser's effort began when he posted the idea of a decoding effort on a single mailing list.

It was theoretically known that 56-bit encryption could be cracked by a brute-force attack within months, as computers have gotten more powerful; DES is a 20-year-old standard. □

Making book on 'net



From customizing college textbooks to tracking imports and exports, McGraw-Hill does it all, thanks to Chairman and CEO Joseph L. Dionne's (left) and CIO John Kerin's trust in intranets, the Web and 'net technologies. In Depth, page 77

Applix to pump up its low-key OLAP server

By Craig Stedman

APPLIX, INC. this week plans to add multiprocessor support and relational data analysis capabilities to its TM1 decision-support server, a low-key product that the company is trying to pump up.

TM1 is little-known compared with rival online analytical processing (OLAP) products from companies such as Oracle Corp. and Arbor Software Corp. But Westboro, Mass.-based Applix has signed bundling deals with Comshare, Inc. in Ann

Arbor, Mich., and several other analysis tools vendors since last fall. Applix also plans to make a bigger marketing push with the new TM1 Server 7.0.

The multiprocessing capabilities should let TM1 support more end users, Applix officials said. Users looking to analyze business information will also be able to keep the data in relational databases instead of storing it in TM1's built-in multidimensional tables.

Shipments of TM1 Server 7.0 are due in October. Pricing starts at \$25,000 for five users.

Jim Bell, manager of reporting systems at Occidental Chemical Corp. in Dallas, said the addition of relational access could make it easier to link his 500 TM1 users to business data as the company starts implementing SAP AG's R/3 applications later this year.

If the users can build TM1 analysis cubes directly from the relational data, "then I don't have to create all that stuff myself" in TM1's database, Bell said. But Occidental would have to make sure performance didn't suffer, he added. □

Corrections

In "IBM to release OpenVMS middleware" [CW, June 2], the location of Level8 Systems, Inc. was incorrectly given as Montreal. Level8 is headquartered in New York.

In the review "Pentium II PCs: Strong performers" [CW, May 12], the L2 cache speed for the Pentium II was incorrectly listed as 66 MHz. The cache speed should be the same speed as the processor.



LSI Logic's Nicole Crawford says her \$3M extranet paid for itself in 18 months. Intranets, follows page 40

Steve Roberts says L. L. Bean recreates its folksy culture online. The Internet, page 47

Southernview's Charles Hebert says building an enterprise management system has to get easier. Page 14

In this issue

NEWS

- 8 Middleware creeps** into critical applications, raising management concerns.
- 10 Microsoft overhauls** messaging clients to ease conflicts caused by Outlook.
- 14 EDS, CA prepare** to jump into the year 2000 melee with an army of consultants and new analysis tools.
- 24 Texas struggles** with Web site that includes driver records. Debate rages over what data should be public.

OPINION

- 36 Mentor, schmentor.** Women will advance by taking on tough projects and proving themselves, Maryfran Johnson contends.
- 105 IS must follow** a vision, not a maintenance plan, Frank Hayes says.

TECHNICAL SECTIONS

CORPORATE STRATEGIES

- 43 Tools are scarce** for automating year 2000 code testing and repair in distributed environments.

THE INTERNET

- 47 The Internet blurs** the line between proprietary E-mail and pure Internet E-mail products.
- 47 Web consortium aims** to let Web browsers choose how personal data can be handled by Web site owners.

THE ENTERPRISE NETWORK

- 53 Tivoli answers** user complaints about lack of support and complexity of TME.

SOFTWARE

- 61 IBM Universal Virtual Machine means** users can write cross-platform applications in Java, Basic or Smalltalk.
- 61 Solaris to get** modular, allowing users to load only the operating system code they need.
- 67 IS managers struggle** to cope with flood of new computing devices and user demand for cool gadgets.
- 67 Users pick** "small mainframes" for testing and minimal host computing in distributed server network.

FEATURES

MANAGING

- 69 Doron Cohen stirs** the pot again after sparking multiple remakes of IS at Trans-Canada PipeLines.

BUYER'S GUIDE

- 73 Two push products offer** rich presentation, but they're clunky and performance-strained.

CAREERS

- 80 Public service sabbaticals can** turn IS professionals into leaders.
- 84 Connecticut cities struggle** to attract IS talent flowing to New York and Boston.

ETC.

Company index	101
Editorial/Letters	36
How to contact CW	101
Inside Lines	106
Stock Ticker	100

"For online publishing, the Mac is the only choice, regardless of what the PC weenies are saying."

Steven Noreyko, webmaster,
The Star and The News newspapers in Indianapolis

See story, page 16

ON THE HOT SEAT

Digital CEO fires back

By Jaikumar Vijayan

Robert B. Palmer is a man under the gun these days. As CEO of Digital Equipment Corp., he has come under increasing fire from unhappy users and investors over what they claim is the company's excruciatingly slow turnaround. Palmer has managed to pull off a string of modestly profitable quarters recently, but product and service revenue has stalled, the flagship Alpha chip is going nowhere and share prices are much lower than when he took over. The result is near-constant speculation that Palmer may have very limited time left at the helm to deliver the goods. In an E-mail exchange with Computerworld last week, Palmer defended his record and examined some of the issues facing his company.

On the sharp criticism dogging the pace of Digital's turnaround:

Those who characterize our turnaround as slow may not completely understand the complexity of the task we faced.

At the time I was privileged to take on this role, headlines were raising questions about Digital's future. One of the headlines I recall very vividly was, "Will DEC survive?" The questions were valid. We had a hugely bloated infrastructure that was appropriate for the competitive realities of the 1980s, but not the 1990s. At that time, we did not have a clear strategy, and we had not embraced open systems or PCs. We really were in a great deal of trouble. Although the turnaround is not complete, we have made a lot of progress.

On where this progress has been made:

We [have] devised a strategy that positions Digital for growth, focusing on high-performance 64-bit Unix platforms, Windows NT and the Internet. The company is strong financially. We have achieved an operating profit in nine of the last 10 quarters. We changed the culture of the company to one that has much greater accountability.

On Digital's plans for the Alpha chip:

The dramatic growth that we hope to achieve will be based on the success of Windows NT and on the increasing market trend toward "visual computing." We expect Alpha to attract the early adopters of visual computing in the animation, online desktop publishing, video editing, image processing, multimedia authoring and game developer markets.

Alpha with Windows NT will be an attractive alternative to Macintosh and [Silicon Graphics, Inc.] workstations in these markets.



Digital Equipment CEO Robert B. Palmer:

"The question, 'Will DEC survive?' was valid"

On the Intel Corp. lawsuit:

Our issue with Intel is an intellectual property dispute, and we believe our position is very sound. We hope that as the initial emotion around the topic dissipates, we will return to a normal commercial relationship with Intel. We expect that Intel will continue to support Digital, and we are committed to continue to support Intel as a customer for Digital products and services. Our customers can be confident about our ability to obtain an adequate supply of chips to meet their needs.

On whether selling or merging the company is an option:

We are obviously of sufficient size to continue to be successful as an independent entity, and that's the strategy we're executing. We clearly have the critical mass, the balance-sheet strength, the financial strength and the resources necessary to remain a successful independent company. □



IS YOUR BACKUP TOUGH ENOUGH FOR THE JOB?

Is your critical data guarded by a puny backup solution that doesn't scale up? Backup Express™, new from Syncsort, is fast and powerful, designed specifically for today's distributed networks, where the data grows every day. Backup Express™ backs up and restores gigabytes of data fast—whether on UNIX, NetWare, or Windows NT. If you want a backup strong enough to keep your network data secure and bring it back fast, call us.

Syncsort

Tel (201) 930-8200 dept. 67CWB
Fax (201) 930-8290 dept. 67CWB
<http://www.syncsort.com/67cwb>

JOINING THE RANKS

Pricing comparisons of the three leading Unix operating systems with Microsoft's upcoming Windows NT Enterprise Edition for an eight-processor SMP machine

Feature	HP-UX 10.x	IBM AIX 4.2	Solaris 2.5	NT Enterprise*
Web server	\$1,295	\$295	Included	\$3,999
Upgrade to 25 users	\$4,900	\$2,185	Included	Included
Clustering	\$11,900	\$10,000	\$7,400	Included
Message queue	\$1,495	\$1,495	\$1,495	Included
Transaction server	\$2,999	\$2,999	Planned	\$7,999
Total	\$22,589	\$16,974	\$8,995	\$11,998

* Pricing is preliminary

NT Enterprise Edition will add clustering, scalability and cost

By Laura DiDio

MICROSOFT CORP. will take users on a ride up the price escalator as it seeks to break through the enterprise ceiling with its next versions of Windows NT and the SQL Server database software.

Microsoft wouldn't officially confirm pricing. But preliminary pricing released by Microsoft to the Transaction Processing Council (TPC) — a standards body specializing in benchmark

testing — indicates that the list prices for Windows NT Enterprise Edition will more than double the current standard versions of Windows NT 4.0 and SQL Server 6.5 — a 113% increase. The product will ship next quarter.

At a combined price of \$11,998 for NT Enterprise Edition plus SQL Server Edition, NT will still cost less than some of its competing Unix rivals. But Sun Microsystems, Inc.'s Solaris will become the lowest-priced operating system in certain configurations (see chart above).

CLUSTERING SUPPORT

NT Enterprise Edition will feature built-in, two-way fail-over clustering support to ensure 100% network uptime; support for 3G bytes of memory compared with the standard 2G bytes in Windows NT 4.0; and the option to buy one- to eight-way symmetrical multiprocessing (SMP) for greater scalability. The current release of Windows NT Server scales to only four processors.

OPERATING SYSTEMS

only four had immediate plans to purchase the Windows NT and SQL Server Enterprise Editions.

"We're still so focused on our current Windows NT 4.0 and SQL Server 6.5 rollout and haven't considered the Enterprise Editions," said Bill Teague, director of product management at Nasdaq in Washington.

A handful of users who are now beta-testing the enterprise version said they need the built-in clustering, transaction processing and additional memory support.

Three of Windows NT Enterprise Edition's 300 beta-test users said the price increase is more than offset by the additional features — particularly the two-way fail-safe clustering capability.

"We won't think twice about spending \$12,000 for a 25-user copy of Windows NT Server and SQL Server Enterprise Editions," said an information systems manager at a top East Coast brokerage, who requested anonymity. The brokerage firm, which has 10,000 users, has been testing the forthcoming

Microsoft enterprise packages for the past month with "excellent results," he said.

Other users voiced skepticism about the high-end capabilities of the NT and SQL Server Enterprise Editions, saying they will stick with their Unix systems.

"We don't need Microsoft's Enterprise versions at this point. We have a large installed base of HP-UX. We can't make a business case for switching to the Windows NT Enterprise Edition now," said Jeff Dazell, LAN administrator of network services for corporate support at Dana Corp. in Toledo, Ohio.

According to the figures Microsoft recently supplied to the TPC, the 25-user version of Windows NT Server Enterprise edition will cost \$3,999 compared with \$1,468 for the comparable 25-user version of Windows NT 4.0. The SQL Server Enterprise Edition will cost \$7,999 for a 25-user license vs. \$4,159 for SQL Server 6.5.

Jim Clark, a consulting systems engineer at a large California bank with 60,000 Windows NT users, said he hopes to get a substantial discount off the list price and will consider it money well-spent.

The clustering capability will actually help the bank minimize costs by running applications on both servers to maximize operations, he added. "If the networks are down for any reason, our business stops. If one center processes 10 loans worth \$100,000 in 10 minutes — that's lost revenue if the networks fail for lack of clustering and redundancy," Clark explained. □

Memphis beta on track

By April Jacobs

WHEN THE BETA version of Microsoft Corp.'s Memphis hits the streets next week, users will find Internet Explorer integration, a common user interface with Windows NT and key manageability at the top of the list of features slated for the next version of Windows 95.

The Redmond, Wash., company hopes potential users will also like its support for digital data and new peripheral standards such as the Universal Serial Bus and the ability to support more than one monitor.

However, users who haven't yet seen the beta version are most focused on improvements designed to ease administration and reduce the cost of ownership. These include management features intended to allow systems administrators to automate application, BIOS and operating system updates as well as remotely troubleshoot desktops.

Memphis also will let information technology managers replicate users' screens to check for problems and then remotely walk them through any tasks they may need to perform.

ATTRACTIVE FEATURES

"I'm most attracted to the NetPC because of the software that will be in Memphis and the manageability it brings with it," said Gary Galvin, chief information officer at Kmart Co. in Troy, Mich.

The management features are

KEY MEMPHIS FEATURES:

- Integration with Internet Explorer 4.0 for Web interface
- Support for users to work on multiple monitors for multitasking and presentation support
- Automatic System Update for downloading latest driver and upgrade supports to users' desktops
- Drivers located in hard drive file so systems managers won't need to reload Windows to support new or different drivers

part of Microsoft's Zero Administration initiative, which will be embedded into its Windows NT 5.0 and Memphis operating systems in the first half of 1998. They are available now in an incomplete kit for NT 4.0 and Windows 95.

Zero Administration is a set of management tools that will let systems administrators remotely distribute software, configure systems and troubleshoot desktops. It was designed to allow systems administrators to tightly control users' access to applications and configuration features, which are virtually unlocked in current Windows 95 systems.

Hardware OEMs, such as Dell Computer Corp. in Round Rock, Texas, showed off initial Zero Administration Kit features running on an NT 4.0 Workstation. □

Crypto-bill sparks ire

By Sharon Machlis
WASHINGTON

The U.S. Senate Commerce, Science and Transportation Committee last week quickly approved the controversial Secure Public Networks Act, which is meant to break years of gridlock over encryption policy.

The legislation is billed as a compromise that balances the interests of privacy advocates and law enforcement concerns. In addition to penalties for network privacy abuses, the measure would require encryption key recovery throughout the federal government and any network built with federal funds.

That means a third party would have access to decrypting keys in case law enforcement officials need access to network traffic.

The bill, sponsored by Sen. John McCain (R-Ariz.) and Sen. Robert Kerrey (D-Neb.), was blasted by computer industry officials and privacy advocates who oppose requiring third-party access to encryption keys.

"It's worse than anything that's been discussed or proposed so far," said James Bidzos, president and CEO of RSA Data Security, Inc. in Redwood City, Calif.

Introducing The Year 2000 Wait Reduction Program

Get The Lead Out

Get to Year 2000 compliance faster and cheaper with SoftFactory/2000™ from Micro Focus. SoftFactory/2000 uses brains vs. brawn, so it allows your Year 2000 project to run lean and mean. Compare that to other Y2K approaches which rely heavily on slow and expensive manpower.

Nutrition Facts

Serving Size: One Y2K Compliance Project

SoftFactory/2000*

Total Fat	0%
Time to Compliance	Fast
Ingredients	
Technology	85%
Manpower	15%
Pain Relievers	Yes
Cost Savings	10% - 50%
Risk	No

* Based on a Year 2000 project involving hard to digest non-compliant code.

SoftFactory/2000 utilizes Y2K problem-solving technology called SmartFind/2000™. SmartFind/2000 reduces the wait of any Year 2000 project by running your code through an intelligent filtering system which identifies only true date fields and only the date occurrences that need to be modified.



SoftFactory/2000 saves time, money and manpower in every phase of the Y2K life cycle. Call Micro Focus at 1-800-632-6265 and begin your wait loss program today.



MICRO FOCUS®
Transforming The Enterprise

© Micro Focus 1997. All rights reserved.
The Micro Focus logo, SoftFactory/2000 and SmartFind/2000 are trademarks and Micro Focus is a registered trademark of Micro Focus Limited.
All other trademarks are property of their respective companies.



Download your
SoftFactory/2000
Cost Savings Model from
www.microfocus.com/year2000.

Users bracing for middleware muddle

► Central management is the next step

By Tim Ouellette

AS USERS PUSH messaging middleware to the forefront of some enterprise integration plans, a host of management, technological and political issues are rearing their heads.

Messaging middleware, such as IBM's MQSeries, sends data between applications via message queues, which deliver the data even if the receiving server is down (see story at right).

Most MQSeries sites have been piloting the middleware in limited tests, but observers said this year the pressure is on as users base larger integration efforts on the product.

Candle Corp., for example, next week is slated to announce MQSecure, a security add-on to MQSeries.

It adds user authentication, message validation and encryption to MQSeries. Those are crucial security features for business-to-business and Internet applications that connect to legacy systems.

"People are starting to be



Bellcore's
Gary Ward

People are concerned about how to manage MQSeries for critical apps

products. That could create friction among departments whose applications and platforms must share data.

"MQSeries doesn't handle an enormous amount of administration and synchronization. It

more concerned how to manage MQSeries as they use it for more critical applications," said Gary Ward, a senior systems engineer at Bellcore, an MQSeries site in Morristown, N.J.

Bellcore uses MQSeries to help integrate its various operations, and includes it to deliver software services to its clients.

With such efforts, management of the far-flung data messages becomes a problem if one gets lost.

And without integrated tracking tools, it is hard to detect a major problem until the applications begin to spit out bad data.

The push to use messaging middleware to carry data across a growing number of distributed servers can also require additional budgeting for programmers or new add-on

is very low-level plumbing, so users have to write a lot of code on top of it to do a specific function," said Ezra Gottheil, a senior analyst at Hurwitz Group, Inc. in Newton, Mass.

HELP ON THE WAY

To help oversee growing messaging middleware installations, systems management firms such as Candle and Boole & Babbage, Inc. offer tools that monitor and configure MQSeries networks.

For example, Tactica Corp. in Portland, Ore., is planning to give MQSeries better remote user access and data synchronization services later this year with an update to its Caprera software.

But users must be prepared to expend more effort if they want to push middleware to more complicated and critical uses.

"Using add-on products gets you deeper into integration efforts, but you have to have a healthy budget and the dollars to spend to get it done," said Bill Murphy, an analyst at The Standish Group International, Inc. in Dennis, Mass.

Users also must manually coordinate a transaction between MQSeries and other IBM middleware, such as CICS and Encina, said Anne Thomas, an analyst at Patricia Seybold Group in Boston.

A LITTLE TLC

"MQSeries' CICS integration is good, but you need to manage it. It doesn't take care of itself," said Tom Loane, chief information officer at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla.

FAQs: Messaging middleware

Analysts expect the application messaging market to jump from about \$150 million last year to \$1 billion by 2000, led by IBM's MQSeries. All told, there are currently about 2,000 installations of MQSeries.

Q: What is messaging middleware?

A: Messaging middleware, also called application or asynchronous messaging, handles the movement of data messages among applications on different platforms, masking the communications issues that arise among the various systems.

Q: How does it work?

A: Messaging middleware such as MQSeries places data messages in queues so if the receiving application isn't available, the message won't be lost. The receiving application later retrieves any messages in its queue and uses the data accordingly.

Q: Who needs messaging middleware?

A: MQSeries started in legacy shops that wanted to enable communication among different proprietary systems. It has since added more than 20 platforms, ranging from Unix to Windows NT servers. Shops with many different platforms running critical applications may consider middleware to ensure that the high volume of data messages among the applications is delivered properly.

Q: What other types of messaging middleware are available?

A: Publish/subscribe middleware, similar to the "push" technology popular on the World Wide Web, is another form of messaging that lets users and applications subscribe to certain types of messages so they don't have to retrieve the specific message or data they want.

Alamo uses CICS and MQSeries to update car rental prices across the country, and MQSeries manages rental orders between the mainframe and the company's World Wide Web site.

But not all middleware issues are technical.

If a company is developing MQSeries links across two very different domains such as mainframes and Windows NT servers, "the developer can get caught in a holy war between the two sides," Ward explained. □

S H O R T S

Unisys' Unruh to step down

James Unruh will step down as chairman and CEO of struggling Unisys Corp. in Blue Bell, Pa. He will remain CEO until a successor is named and will step down as chairman next April. In six years as chairman, Unruh has overseen four restructurings, the closing down of many plants and thousands of layoffs.

Communicator 4.0 patch out

In response to a browser security hole, Netscape Communications Corp. has issued a free bug fix for its Communicator 4.0. A fix for Navigator 3.0 will be ready next month. The Mountain View, Calif., company will gauge user demand before posting a bug fix for Navigator 2.x.

Court nixes IBM outsourcing pact

An appellate division of New York's State Supreme Court last week ruled that Westchester County, N.Y., illegally entered into a 10-year, \$102 million outsourcing agreement with IBM earlier this year. The ruling also support-

ed an earlier decision by State Supreme Court Justice Nicholas Colabella, who found that County Executive Andrew O'Rourke lacked the authority to grant the deal to IBM [CW, Feb. 3]. The appeals court decision still leaves unresolved who will perform those services.

Gateway gets ALR for \$190M

Gateway 2000, Inc. jumped into the corporate server market by acquiring Advanced Logic Research, Inc. (ALR) for \$194 million, or \$15.50 per share. North Sioux City, S.D.-based Gateway will use ALR's server base to expand its corporate customer base. ALR, in Irvine, Calif., makes multiprocessor PC servers. Gateway officials said the company would keep the ALR name and channels and offer servers under the Gateway name.

Microsoft Java to access Windows

Microsoft Corp. officials said the company will build access to all Windows functions into its version of Java, Sun Microsystems, Inc.'s Internet development language. J/Direct will give Java applets complete access to

a user's computer, including the ability to read and write to disk files and run other applications. Java programmers will use the Windows functions through a Java class library that will be built in to Microsoft's Visual J++ and development tools from Sybase, Inc. and Borland International, Inc.

PC firewalls to hit market

Atlanta-based Software Builders will bring firewall technology to the PC next month with PC Secure. The "personal firewall" package will let individuals or workgroups establish security rules and receive notification of unauthorized access requests. It will cost \$59.99.

SHORT TAKES Cisco Systems, Inc. is beta-testing Cisco Resource Manager for remotely managing its routers from a browser on the corporate intranet. The software will ship next month for NT or Sun's Solaris. ... Perot Systems Corp. in Dallas will purchase Internet start-up Nets, Inc., which recently filed for Chapter 11 bankruptcy, for \$9 million. ... Digital Equipment Corp. filed a motion to gag its former employees who are now at Intel Corp.

Oracle OLAP: Warehouse Ready, Web Enabled.

On-Line Analytical Processing (OLAP) allows you to get real business benefit out of your data warehouse. Oracle's OLAP servers, query and analysis tools, database tools and applications offer the most comprehensive capabilities of any vendor. And with our most recent release, all these capabilities can now be deployed on the Web.

Warehouse Ready

- Relational OLAP—direct analysis of relational data
- Scalable OLAP: mobile, to mart, to warehouse
- Object-oriented development tools
- Packaged OLAP applications
- Broad third-party support

Web Enabled

- Web viewing: query, drill, pivot, VRML graphics
- All analytic capabilities available on the Web; forecasting, modeling, etc.
- Object-oriented Web authoring
- Any Web browser, any Web server, any authoring tool



Introducing the next generation of OLAP technology from Oracle.

Oracle Express Server 6.0[®] through a hybrid OLAP server and direct access to any relational database, eliminates the trade-off between analytical power and relational data access.

Oracle Express Objects 2.0[®] allows you to build OLAP applications for any user, running in any environment—client/server, Web and stand-alone desktop.

Oracle Financial Analyzer and Sales Analyzer[®] are packaged OLAP applications for financial and sales management.

For the leader in OLAP solutions, call Oracle today at 1-800-633-1071, ext. 11394, or find us on the Web at <http://www.oracle.com/olap/>

ORACLE[®]

Enabling the Information Age[™]

Microsoft vows to unscramble E-mail mess

► *Messaging clients get common interface, compatibility boost*

By Barb Cole-Gomolski

RESPONDING TO CUSTOMER complaints, Microsoft Corp. last week announced plans to give its multiple elec-

tronic-mail clients a common user interface and vowed to make them work better together.

Customers said the company's multiple messaging clients are confusing and

hard to deploy because they aren't completely compatible.

Under the plan, Redmond, Wash.-based Microsoft will brand all its messaging clients with the Outlook name, give them a common user interface and ensure that features such as calendaring

and scheduling work across the platforms. The move is expected to reduce training costs and allow companies to migrate to the clients in phases.

"We've been pushing Microsoft to standardize its whole [mail] client strategy," said Bob Cavallaro, director of advanced technology at American Insurance Group in New York, which is deploying 10,000 Outlook seats. Giving the products a consistent interface will reduce support costs, Cavallaro said.

The plan also could help companies phase in migrations to the full-featured Outlook client, which runs only on the 32-bit Windows platform. That client strategy lets users adopt Outlook without having to move to Windows 95.

"Microsoft had too many clients, and they appear to be resolving that."

— Rob Enderle,

Giga Information Group

"Microsoft has finally realized that they have created an E-mail mess," said Mark Schmidt, information systems director at Heritage Broadcasting Group, which runs television stations in Tustin, Mich. Schmidt said he ran into a snag earlier this year when the company moved users off Microsoft's Schedule+ calendaring software to Outlook because the calendaring and scheduling component of Outlook wasn't completely backward-compatible with Schedule+.

Indeed, there are several Microsoft messaging clients floating around at large sites. Besides Outlook, the company sold an Exchange client, which ran on Windows 3.1, Windows 95 and Macintoshes, and a mail and news reader in its Internet Explorer World Wide Web browser. For those users, calendaring and scheduling was available in the Schedule+ application. Some sites also use the Windows Messaging System Inbox that is included with Windows 95.

"Microsoft had too many clients, and they appear to be resolving that," said Rob Enderle, a senior analyst at Giga Information Group in Santa Clara, Calif.

The plan calls for five clients. That is still a high number, but users said it is acceptable as long as the clients share Outlook traits.

The clients include Outlook, Outlook Express, Outlook Web Access, Outlook for Windows 3.1 and Outlook for Macintosh. The older clients — Exchange client, Schedule+ and the Windows Messaging System Inbox — will be supported, but there won't be further development on those platforms, Microsoft officials said.

Meanwhile, Microsoft officials also said last week that a service pack for Exchange 5.0 will be available for download off the Web this week.

The service pack is a collection of about 150 fixes and improvements, including support for multiple off-line address books, company officials said. □

Red Brick® Warehouse 5.0 vs Oracle8

Data warehousing is today's most critical database application, but data warehouses have specialized RDBMS requirements which cannot be served by aging, overweight architectures originally designed for OLTP (on-line transaction processing) databases.

Data Warehousing Features	Red Brick Warehouse 5.0	Oracle8
• DSS-optimized architecture	YES	NO
• Parallel star index star join	YES	NO
• Parallel bit-map star join	YES	NO
• Adaptive bit-map indexing	YES	NO
• Integrated data mining	YES	NO
• Advanced ANSI SQL-92	YES	NO
• SuperScan I/O reduction	YES	NO
• Parallel loader	YES	NO
• Guaranteed referential integrity	YES	NO
• Parallel processing on demand	YES	NO
• Time-cyclic data management	YES	NO

Red Brick Warehouse is the only open standard RDBMS built from the ground up to meet all the critical performance requirements for all data warehouse applications, including data marts, on-line analytical processing (OLAP) and

data mining. Oracle8 means compromise at every step.

Can you afford a compromised solution for your critical information needs?

Call Red Brick at 1-800-777-2585, or find us
on the Web at <http://www.redbrick.com>.



RED BRICK®
The Data Warehouse Company™

Q: Where can you find the world's fastest CD-ROM Networking System?



A: www.procom.com/53X

Procom Technology, the leading name in CD-ROM networking solutions, is proud to introduce the fastest way to distribute gigabytes of CD-ROM based applications and data to networked users.

- Fast 53X performance
- 10ms access time
- Choice of 6-to 63-drive configurations
- Compatible with NetWare, NT, UNIX & OS/2
- Hot-swap drives, redundant power supplies & fans

Hyper CD is the newest in CD-ROM technology, accelerating CD-ROM access



through fast-burst reads to provide a data transfer rate of 7.9MB/sec and an average seek time of 10ms, more than four times faster than the fastest drives available today. So you get all the features of CD-ROM technology a durable, portable, interchangeable, low-cost medium at hard drive speed.

Join the growing number of government agencies, financial institutions, law firms and Fortune 500 companies who are already enjoying the benefits of networking CD-ROMs on Procom Technology's CD servers and arrays. Call us today at 800-800-8600 x414 or visit our website at www.procom.com.

PROCOM TECHNOLOGY INC.

2181 Dupont Drive Irvine, California 92612

Tel: 800.800.8600 • Tel: 714.852.1000 • Fax: 714.261.7380

<http://www.procom.com> • E Mail: info@procom.com



PC EXPO

NetPCs go vertical; remote use questioned

By April Jacobs

THE NETPC, Microsoft Corp. and Intel Corp.'s answer to the network computer, received a qualified welcome last week from users already struggling to make sense out of a crowded, confusing desktop market.

A dozen vendors lined up at PC Expo in New York last week to show off variations of the NetPC specification, none of which is likely to hit the streets until late this year. Most of the systems are targeted — at least initially — at vertical markets that deal with limited counter space, high security needs and specific, limited applications, such as banking and insurance.

Unclear to users attending the event is how or if the NetPC will fit into an increasingly mobile workforce. Another question was pricing, although it will likely range from \$1,000 to \$1,500.

UNANSWERED QUESTIONS

Few answers were forthcoming on those issues from a crew of vendors that included Dell Computer Corp. in Round Rock, Texas; Compaq Computer Corp. in Austin, Texas; IBM in Armonk, N.Y.; Hewlett-Packard Co. in Palo Alto, Calif.; Gateway 2000, Inc. in North Sioux City, S.D.; and NEC Corp. in Mountain View, Calif.

But that didn't stop potential users such as Pennzoil Co., Kmart Corp., The Prudential Insurance Company of America,

NetPCs will feature

- Lock-down box with easy-service features, such as pull-out chassis for upgrades.
- No floppy or CD-ROM drives to prevent users from downloading or copying files from external drives.
- Full-powered PC capabilities, including Pentium with MMX and Pentium II processors. Support for latest peripherals, including Universal Serial Bus ports.

Bose Corp. and others from showing up to look at — and in some cases tout — the potential benefits of the NetPC, including its lock-down, hassle-free form and its software management underpinnings.

"We look at the NetPC as a way to lower total cost of ownership," said Britt Mayo, Pennzoil's director of information technology. Mayo said because Pennzoil's IT department technically has a zero-dollar budget, all costs are paid for by the different business groups within the company. That, he noted, drives everyone to look for ways to lower computing costs.

In fact, most users found the software underpinnings for the NetPC more attractive than its hardware features. These include management technology in the form of Microsoft's Zero Administration for Windows,

due in full form with the release of Windows NT 5.0 and the next version of Windows 95 — codenamed Memphis — next year, as well as drill-down and troubleshooting technology from Intel and each vendor that makes the NetPC.

Unlike a network computer, the NetPC has a hard drive. It also features a locked-down design aimed at preventing users from adding applications or copying data to or from a floppy disk or CD-ROM drive. It comes in a variety of configurations, ranging from Pentium with MMX to Pentium II-class machines.

REMOTE TROUBLESHOOTING

Several users cited the NetPC's potential to reduce desktop visits, through its remote troubleshooting features, as another attractive feature.

"We want to build models for our desktop software configurations and consistently deploy those across the enterprise," said Myles Trachtenberg, vice president and chief information officer at Prudential Health Care, a division of the insurance company.

Microsoft tried to pound home that type of strategy and its benefits to users last week in demonstrations. The company also committed to aligning its various operating systems, including the different versions of Windows NT, Memphis and Windows CE, to scale from the top to bottom of an enterprise.

Trachtenberg said software distribution at the firm is very labor-intensive, requiring hundreds of systems people to go out to desktops quarterly to update and reconfigure machines. "We don't have enough people to go around," he said. He added that features in Microsoft's Zero Administration initiative, as well as those in Intel's Wake-on-LAN management software, should help counter that.

But others said much of the underlying software management that makes the NetPC attractive will be found on "plain-Jane" PCs that vendors will begin rolling out over the next several months. Dell, for example, demonstrated machines running Microsoft's Zero Administration Kit for Windows NT 4.0 Workstation, which should be available this week.

"We have a huge interest in Zero Administration, but to launch an entirely separate class of hardware to sell it seems confusing. I'm not sold yet," said an IS manager at a large New York-based bank, who requested anonymity. □

Tool problems put bumps in the road for Oracle8

► Oracle faces doubts on component plans

By Craig Stedman

ORACLE CORP. wanted to be firing on all cylinders when it finally launched the Oracle8 database this week. But the company's development tools business is spinning its wheels.

Questions about Oracle's plans for moving into the component-based development arena abound in the wake of a recent decision to put its much-hyped Sedona tool on hold. The uncertainty comes at a time when sales of Oracle's tools are already slacking off. A 7.5% decline in tools revenue was the one blot on the solid fiscal 1997

company is developing distributed medical software for multi-site health care providers.

Dunlop Tire Co. in Amherst, N.Y., plans to start using Developer/2000 this year to build Oracle applications. "But I don't see in the marketplace that it's the hot tool to use right now," said Hugh Allan, manager of information technology at Dunlop. "I don't see many developers flocking to Developer/2000."

"We understand there's a lot of questions [about our strategy]," said Steve Ehrlich, senior director of tools product marketing at Oracle. Distributed object applications are "definitely the future" because they promise to let users tie together multiple

Developer/2000 and Designer/2000

Strengths

- Tight integration with Oracle databases
- High level of built-in functionality
- Automatic generation of application code

Weaknesses

- Little presence beyond Oracle database users
- Oriented to building two-tier applications
- No support for multiple programming languages

financial results that Oracle reported last week (see related story, page 32).

At the rollout of Oracle8 in New York, Oracle officials said, the company will try to convince users that upcoming technology will enable its tools to handle the rigorous job of building multitier network computing applications with object technology even though Sedona is in limbo [CW, June 16].

IMPORTANT TO USERS

Having tools that more fully complement Oracle's Network Computing Architecture scheme for object-based distributed applications "is something that's important to us," said Steve Boley, vice president of research and development at Integrated Medical Networks LLC in Irving, Texas.

Oracle's mainstay Developer/2000 tool has improved greatly in the past couple years, Boley said. But developers need to be clever to make the tool work for applications that go beyond two tiers, he added. "You just have to figure out a different way to skin the cat," he said. Boley said.

systems in a coherent whole that can be easily maintained and modified, he said.

OBJECT SUPPORT

Oracle last month released a World Wide Web-enabled version of Developer/2000. And Ehrlich said the Redwood Shores, Calif., company this week will outline plans for augmenting its client/server tools with more complete object and network computing support late this year or early next year.

Included will be new versions of Developer/2000 and its companion Designer 2000 modeling tool, plus a separate product for modeling Oracle8 objects. Oracle is also working on a component builder tool that would do some of the jobs Sedona was designed for, Ehrlich said.

Thanks to its big database market share, Oracle is the leading vendor of fourth-generation language tools, according to International Data Corp. in Framingham, Mass. But some analysts remain skeptical that Oracle can take its existing tools beyond the two-tier world. □

NetPC features

The following criteria give the NetPC its manageability and security:

- Standard remote boot and preboot allows for network boot and management agents.
- Instrumentation and systems monitoring will let users avoid problems, troubleshoot and enhance asset management.
- Wake-on-LAN technology from Intel and power management allow for off-hours maintenance.
- Microsoft's Zero Administration for Windows, which will be embedded in Windows NT 5.0 and Memphis. It is also available in kit form for Windows NT 4.0 and Windows 95. It will allow for enhanced management, including troubleshooting and remote and automatic software distribution.

— April Jacobs

Separated at birth?



Avid snow-skier and tennis fanatic
Ron Wohl of Oracle Applications...

and avid water-skier and basketball
fanatic Doug Kaewert of Sun?

Oracle Applications and Sun

Sun and Oracle Applications. Related? When it comes to offering your business real solutions, we are. Oracle applications are optimized, tested, and tuned on Sun for ultimate performance. We also jointly staff competency centers and our service and support teams. So you have pre-tested solutions and end-to-end service and support for your diverse business environment. That's why so many of the largest corporations, from a variety of industries, are using Sun and Oracle Applications around the globe. To find out more about these comprehensive solutions you can depend on, contact Sun at www.sun.com/sepcw or Oracle Applications at <http://www.oracle.com/products/applications>. **THE NETWORK IS THE COMPUTER™**

ORACLE®

 **Sun**
microsystems

HP tilts OpenView at enterprise

► Users seek integrated tools that can manage more than network

By Patrick Dryden
ANAHEIM, CALIF.

MANAGE OVERALL service levels from a single pane of glass.

That mantra was repeated by information systems managers and Hewlett-Packard Co. last week at OpenView Forum, the annual conference for users of HP's tools for managing distributed client/server networks.

For IS managers, it is a mission statement. "We're trying to lift the walls separating our network, systems and application teams and the help desk to better serve our global users," said Tom Reinsel, network design and management analyst at Eli Lilly and Co. in Indianapolis.

For HP, it is a battle cry for competing with enterprise management leaders Computer Associates International, Inc. and IBM's Tivoli Systems, Inc. Last week, HP announced more tools that can be integrated with Network Node Manager (NNM), its market-leading network management platform (see story at right).

But one analyst said HP must overcome the "cry wolf" syndrome. "We've heard this two or three times before from HP,"



Southernview Technologies' Charles Hebert:
"HP is on the right track by acquiring new tools and improving integration"

said Herb VanHook, an analyst at Meta Group, Inc. in Stamford, Conn.

Implementing OpenView still requires so much integration work — by users or HP's service organization — that strategic planners prefer the suite promises of CA and Tivoli, VanHook said.

Several attendees said they favor extending their NNM expertise to more areas through OpenView as a framework.

For example, Eli Lilly started with NNM and plans to add HP's IT/Operations and IT/Administration tools to coordinate management of networks and systems. HP's NetMetrix software already monitors performance of applications throughout Eli Lilly.

But others plan to keep HP's role focused only on networks. They can link NNM to systems management tools from CA and Tivoli that handle such tasks as software distribution.

Can HP get there from here?

HP last week outlined how it will transform OpenView — best known for network management — into a modular set of tools and services for managing enterprise client/server environments.

"They're actively filling in the holes," said Waverly Deutsch, a management analyst at Forrester Research, Inc. in Cambridge, Mass. "HP will gain mind share and be a contender."

Specifically, HP announced the following steps:

- New versions of IT/Operations and IT/Administration that integrate better with Network Node Manager, HP's network management platform. The event and systems management tools will offer new capabilities, such as monitoring of Internet servers, firewalls and hyperlinks.
- Completion of the acquisition of Netherlands-based ProLin, which will provide a suite of service-level management tools.
- Enhancement of Norton Administrator for Networks desktop-management tools — acquired from Symantec Corp. — for release this fall.
- Support for managing Oracle Corp. and Informix Software, Inc. databases, followed by support for Microsoft's SQL Server later this year and Sybase, Inc. databases next year.
- The ability later this year to manage The Baan Co. applications and Microsoft's Exchange and BackOffice. (OpenView already manages SAP AG R/3 applications for 150 users.)

— Patrick Dryden

"We need to provide our help desk a high-level view of all the parts so they can triage problems users experience," said Paul Edmunds, senior network analyst at Duke Energy Co. in Charlotte, N.C.

To do that, the utility will link NNM with Microsoft Corp.'s Systems Management Server to manage desktops and Tivoli's TME 10 to manage servers.

Many IS departments "have built quite extensive management frameworks based on

NNM, but it's not easy," said Charles Hebert, president of Southernview Technologies, Inc., a network management consultancy in Kennesaw, Ga.

"HP is on the right track by acquiring new tools and improving integration," Hebert said. "The bottom line these days is meeting users' service-level expectations. To do that, we need to see everything — the network, all the systems, the applications and overall performance." □

Bay buys way into Gigabit Ethernet

By Bob Wallace

USERS SAID Bay Networks, Inc. was smart to cut a deal last week to buy Gigabit Ethernet start-up Rapid City Communications for \$155 million in a stock swap.

Praising the vendor's aggressiveness, Bay customers said they are interested in Gigabit Ethernet technology long term because it provides the necessary upgrade path beyond 100M bit/sec. Fast Ethernet.

There isn't a high demand for Gigabit Ethernet switching, but it is expected to increase over the next several years. For example, Dell'Oro Group, a consulting firm in Portola Valley, Calif., predicted Gigabit Ethernet switching revenue will jump from \$64.7 million this year to \$980 million in 2000.

"To me, it's the new management team making a statement that they're willing to step up and address the needs of their

customer base," said Earl Perkins, manager of network projects at Entergy Services, Inc., a utility in Gretna, La. "Given their financial situation, it's a bit of a risk. But I think they made the move for the right reason."

Bay's stock has plummeted in the years following its creation in 1994, and the company has posted disappointing financial results in recent quarters. It also lost its original CEO, chief financial officer and other key managers.

The purchase of Mountain View, Calif.-based Rapid City could catapult Bay into the lead in the race to provide Gigabit Ethernet switches to users. Cisco Systems, Inc., 3Com Corp. and Cabletron Systems, Inc. don't yet ship those systems.

Bay executives said Rapid City's products, which include Gigabit Ethernet switches with the built-in ability to route 7 mil-

lion packet/sec., will be fully manageable by Bay's Optivity element management system by the fourth quarter.

Cisco spent more than \$220 million to buy Gigabit Ethernet technology vendor Granite Systems last September.

"It certainly looks like Bay will have what it takes sooner than the other major players, which will hopefully force others to take action rather than sit on the sidelines," said Edward Bianco, chief information officer at Lowell General Hospital in Lowell, Mass. "Bay buying into this technology is a shot in the arm for Gigabit Ethernet."

Analysts said they were pleased with Bay's purchase.

"Bay needed to catch up on key technologies, and Gigabit Ethernet was a big one," said Craig Johnson, an analyst at Current Analysis in Ashburn, Va. □

EDS, CA each to unveil year 2000 services plan

By Thomas Hoffman

ELECTRONIC DATA SYSTEMS Corp. will jump on the year 2000 bandwagon this week when it announces partnerships that will let it, too, offer millennium services.

The Plano, Texas, services giant will announce at the Year 2000 Conference and Expo in Chicago a partnership with Reasoning, Inc. that will let EDS market the Reasoning 2000 code analysis and remediation tool.

Another player that will round out its year 2000 strategies this week is Computer Associates International, Inc. CA will introduce CA-Fix/2000, an automated Cobol remediation tool that adds to its CA Discovery 2000 tool set.

CA intends to price CA-Fix/2000 on a per-line-of-code ba-

sis. Pricing for the tool will be made public when CA begins shipping Fix/2000 late next month, said Mark Stabler, a vice president at the software vendor in Islandia, N.Y.

Automated remediation tools such as CA-Fix/2000 are becoming increasingly critical for year 2000 project managers as resources become scarce and managers are crunched for time, said Dick Heiman, an analyst at International Data Corp., a research firm in Framingham, Mass.

Ken Goltara, an early user of CA-Fix/2000, echoed those thoughts. Goltara, director of systems development at Isuzu Motors America, Inc. in Buena Park, Calif., said he expects the tool to help his group shave 50% to 75% off the time it will spend converting its Cobol applications. □

Separated at birth?™



Sports car enthusiast Doug Percy of Geac SmartStream...

and sports memorabilia collector Joe Roebuck of Sun?

Geac SmartStream & Sun

Sun and Geac SmartStream. Related? When it comes to offering your business real solutions, we are. Geac initially developed its first Java applet exclusively on Sun. And Geac SmartStream continues to design Java applets for peak performance on Sun, giving customers access to information at lower cost. In addition, SmartStream® applications running on Sun hardware get a boost in performance and efficiency. Together, Geac and Sun have created solutions for some of the biggest names in the Fortune 500, as well as some of the world's fastest growing "up-and-coming" businesses. But what can we offer you? Increased productivity and speed that can change the way you do business. With swift, cutting-edge results. Which is, after all, what our little family is all about. For more information, visit us at www.sun.com/sepcw or www.geac.com. **THE NETWORK IS THE COMPUTER™**

©1997 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun Logo, Java, and The Network Is The Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. SmartStream is a registered trademark of Geac Computer Systems, Inc. "Separated at birth" is a registered trademark of SPY Magazine.

Geac
SMART Stream

 Sun
microsystems

Gripe-fest held by DEC shareholders

By Jaikumar Vijayan

IT'S A WARNING shot that may yet fall short of the bow.

An unusual gathering last week of major Digital Equipment Corp. investors, who met at the invitation of shareholder activist Herbert A. Denton to discuss problems facing the company, is unlikely to force any immediate or major changes at the helm. The one concrete proposal that is likely to emerge from the shareholders, who represented about 40% of Digital's shares, is a request for new, younger nominees to the board. Five of Digital's nine directors are older than 70.

Still, the meeting serves as the strongest indication yet of growing investor and user concern over Digital's continuing financial problems — and the consequent need for some far-reaching changes.

MORE AGGRAVATION

It is also the latest aggravation for Digital CEO Robert B. Palmer, who has been coming under more pressure recently (see story, page 4). Since Palmer's arrival in 1992, Digital's stock price has slipped by more than 12%, and it has run up accumulated losses of more than \$2 billion and cut more than 50,000 jobs.

"Digital has been put on notice that investors are mad as hell and are simply not going to take things as they are right now," said Terry Shannon, editor of "Shannon Knows DEC," a newsletter in Ashland, Mass.

Ringing the bell is Denton, president of Providence Capital, Inc., a small New York brokerage, who has an admittedly minuscule stake in Digital. He called the meeting to find out whether major investors would join him in forcing Digital to revamp its board of directors and management or even to seek a merger partner. But there was little indication last week whether any of the participants were willing to join such an effort.

"I am a little worried by all that is going on, but frankly, I don't know what is going to be accomplished by changing the directors at Digital," said Joseph Pollizzi, president of the Digital Equipment Computer User Society. □

Tool helps weed out job applicants online

By Julia King

NETSTART, INC. in Reston, Va., this week will announce a new version of its client/server-based software for recruiting via the Internet.

The enhanced software promises to further shorten hiring cycles by automating even more of the behind-the-scenes administrative work involved in resume processing.

TeamBuilder 2.0 lets recruiters and hiring managers — without any programming — build World Wide Web pages to post and update job openings on a corporate web site. Postings can then be sent automatically

Fast facts about Internet recruiting

79% of companies used the Internet for recruiting in the past year

61% of human resource managers post openings on a Web job site

14% post openings on a company Web page

68% of companies that recruit via the Internet accept resumes via E-mail

Base: 600 human resource professionals at U.S. companies

Source: JWT Specialized Communications, Los Angeles

to Web-based job sites such as Netstart's CareerBuilder site, The Monster Board and Career Mosaic.

Also new are improved database search capabilities and a Java-based client that lets managers who do occasional hiring access and route resumes via a company intranet. That feature eliminates the need for TeamBuilder client software on every manager's desktop.

Multiple hiring managers can also simultaneously review a candidate's resume, which can cut days from interoffice routing times.

Pricing for TeamBuilder 2.0 begins at \$7,200.

USWeb Corp., a professional services company in Santa Clara, Calif., has used TeamBuilder 1.0 to post job openings and hire much of its 500-person staff during the past year. The system has cut the time it takes to post jobs from a week to a few hours, according to Josh Goldman, director of development.

Internally, USWeb has collected about 9,000 resumes in the system's database, which is automatically searched when openings come up.

Companies can also use the system to measure recruiting performance by tracking the number of responses to job postings on different sites. □

New spring in Mac managers' step

By Lisa Piscarillo

SANTA CLARA, CALIF.

AT LAST WEEK'S Mactivity conference, Macintosh managers acknowledged feeling more upbeat about the future of Apple Computer, Inc. based on products released over the past several months and the promise of future technologies.

In recent months, Apple has delivered more reliable products; refreshed its languishing notebook line; simplified its product lineup, using more industry-standard components in fewer computer models; and articulated a clear operating system strategy.

Still, Apple is like the boyfriend who broke your forgiving daughter's heart.

TOUGH PARENTS

Loyal Macintosh users, like teenagers in love, might be quicker to forgive missteps, but corporate executives, like parents, want evidence that promises are being kept. Specifically, users want to see Apple's next-generation operating system, Rhapsody, arrive on time next summer. And decision-makers want proof that the company's financials are in order.

John Oakley, Macintosh systems administrator at Qualcomm, Inc., said the San Diego telecommunications firm is in a holding pattern waiting for Rhapsody. An all-Macintosh shop three years ago, Qualcomm now has about 5,000 PCs that run Windows 95 and Windows NT and 3,000 Macintoshes. But Oakley said the

trend could be reversed.

"It's all in Apple's hands now," he said. "If Rhapsody is really good and on time, there is a strong chance some of the users who moved to Windows will switch back, because we have no policy dictating which platform people have to use."

For corporate executives and the bosses of Macintosh infor-

mation systems managers, the financials are still an issue. Apple posted a \$704 million loss in its most recent quarter, and analysts expect the company next month to log a quarterly loss of about \$50 million.

Observers said Apple's financial woes often get the attention of nontechnical executives, who pressure IS managers to move

away from the company.

But Apple's core customers, such as multimedia, publishing and Internet content creators, said they remain committed to the platform because of the technology, regardless of perception.

"For online publishing the Mac is the only choice, regardless of what the PC weenies are saying," said Steven Noreiko, webmaster at *The Star* and *The News* newspapers in Indianapolis. □

Sun to link banks via Java

CONTINUED FROM PAGE 1

ence," said George Kivel, a technology analyst at The Tower Group, a financial services technology consultancy in Newton, Mass.

The architecture relies on Sun's Java technology and open application programming interfaces (API) to connect legacy systems that support various customer delivery channels, including automated teller machines (ATM), call centers and PC/Web-based stock-trading systems. Sun Connect supports multiple messaging standards, such as Microsoft Corp.'s Open Financial Exchange and Integration Corp.'s Gold standard.

A brokerage that builds a Web-based trading application, for example, can use Sun Connect to deploy the applications across all its Web-enabled delivery channels, including PCs, kiosks, network computers and personal digital assistants.

"I think there would be interest in this on Wall Street, given

the direction we're heading in connecting with our customers over the Internet," said Bruce J. Mellusi, senior vice president of information systems and telecommunication services at Prudential Securities, Inc. in New York.

Prudential currently offers its investors online access to end-of-day stock prices and morning updates on their investment positions. Sun Connect could play a role in supporting additional features that Prudential plans to add to its Web site. Mellusi declined to discuss those features.

Sun Connect might be a tougher sell to conservative bankers. Sun "is going to have to prove to the industry that [Sun Connect] products are reliable," said Abraham L. Nader, a senior vice president at Dollar Bank in Pittsburgh. At institutions such as Dollar Bank, the security and reliability of ATMs and call centers "are extremely important, and we tend to be

conservative about products that aren't established," Nader said.

Sun Connect uses existing Sun hardware, software and APIs, including its Simple Key Internet Protocol client-to-server encryption technology. Mountain View, Calif.-based Sun plans to demonstrate Sun Connect at the SIA show, where it will showcase how San Francisco-based Discover Brokerage Direct applied the technology, said Jim Bressler, global marketing manager of banking at Sun in Menlo Park, Calif.

Bressler said Sun intends Sun Connect to help banks and brokerages improve customer services by tightening integration among their delivery channels.

The Sun Connect architecture is free, although pricing for individual products will be dictated by independent software vendors working with Sun customers, Bressler said.

For example, BEA Systems, Inc. in Sunnyvale, Calif., plans to use Sun Connect to help BEA's Tuxedo transaction-processing middleware connect back-office systems with online trading systems and other Web-based applications. □

I WANT TO KNOW MORE.

[Fill me in.]

Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name	MI	Last Name
Title	Company	E-mail address
Address Address Shown: <input type="checkbox"/> Home <input type="checkbox"/> Business * U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.	City <input type="checkbox"/> New <input type="checkbox"/> Renew	State Zip Single copy price: \$3.00/issue
Please complete the questions below.		
1. BUSINESS/INDUSTRY (Circle one) 10. Manufacturer (other than computer) 20. Finance/Insurance/Real Estate 30. Medical/Law/Education 40. Wholesale/Retail/Trade 50. Business Service (except DP) 60. Government - State/Federal/Local 65. Communications Systems/Public Utilities/ Transportation 70. Mining/Construction/Petroleum/Refining/Agric. 80. Manufacturer of Computers, Computer-Related Systems or Peripherals 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services 90. Computer/Peripheral Dealer/Dist./ Retailer 95. Other (Please Specify)		
2. TITLE/FUNCTION (Circle one) IS/MIS/DP MANAGEMENT 19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management 21. Dir./Mgr. MIS Services, Information Center 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech Planning, Admin. Svcs. 23. Dir./Mgr. Sys. Development, Sys. Architecture 31. Programming Management, Software Developers 41. Engineering, Scientific, R&D, Tech. Mgt. 60. Sys. Integrators/VARs/Consulting Mgt. CORPORATE MANAGEMENT 11. President, Owner/Partner, General Mgr. 12. Vice President, Asst. VP 13. Treasurer, Controller, Financial Officer		
3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.) Operating Systems (a) Solaris (e) Mac OS (b) Netware (f) Windows NT (c) OS/2 (g) Windows (d) Unix (h) NeXTstep App. Development Products <input type="checkbox"/> Yes <input type="checkbox"/> No Networking Products <input type="checkbox"/> Yes <input type="checkbox"/> No Intranet Products <input type="checkbox"/> Yes <input type="checkbox"/> No		

COMPUTERWORLD

B267 7

THINK FAST OR GET LEFT BEHIND.

Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name	MI	Last Name
Title	Company	E-mail address
Address Address Shown: <input type="checkbox"/> Home <input type="checkbox"/> Business * U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.	City <input type="checkbox"/> New <input type="checkbox"/> Renew	State Zip Single copy price: \$3.00/issue
Please complete the questions below.		
1. BUSINESS/INDUSTRY (Circle one) 10. Manufacturer (other than computer) 20. Finance/Insurance/Real Estate 30. Medical/Law/Education 40. Wholesale/Retail/Trade 50. Business Service (except DP) 60. Government - State/Federal/Local 65. Communications Systems/Public Utilities/ Transportation 70. Mining/Construction/Petroleum/Refining/Agric. 80. Manufacturer of Computers, Computer-Related Systems or Peripherals 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services 90. Computer/Peripheral Dealer/Dist./ Retailer 95. Other (Please Specify)		
2. TITLE/FUNCTION (Circle one) IS/MIS/DP MANAGEMENT 19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management 21. Dir./Mgr. MIS Services, Information Center 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech Planning, Admin. Svcs. 23. Dir./Mgr. Sys. Development, Sys. Architecture 31. Programming Management, Software Developers 41. Engineering, Scientific, R&D, Tech. Mgt. 60. Sys. Integrators/VARs/Consulting Mgt. CORPORATE MANAGEMENT 11. President, Owner/Partner, General Mgr. 12. Vice President, Asst. VP 13. Treasurer, Controller, Financial Officer		
3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.) Operating Systems (a) Solaris (e) Mac OS (b) Netware (f) Windows NT (c) OS/2 (g) Windows (d) Unix (h) NeXTstep App. Development Products <input type="checkbox"/> Yes <input type="checkbox"/> No Networking Products <input type="checkbox"/> Yes <input type="checkbox"/> No Intranet Products <input type="checkbox"/> Yes <input type="checkbox"/> No		

COMPUTERWORLD

B2F7 &

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144

Seagate seeks to ease NetWare recovery

By Matt Hamblen

SEAGATE SOFTWARE in Orlando, Fla., this week will announce Intelligent Disaster Recovery, a software package that users said cuts hours from the chore of disaster recovery for NetWare LANs.

Ken Lowrie, vice president of HiTecSoft Corp. in Scottsdale, Ariz., tested the product by deleting NetWare and DOS partitions on a server and rebooting with Intelligent Disaster Recovery. It took 20 minutes to get the server ready for a full restore, something that normally takes about two hours, he said.

The Seagate product can work in pure Novell, Inc. NetWare LANs or LANs with both NetWare and Microsoft Corp.'s Windows NT platforms, according to analysts and Seagate officials.

The recovery software rebuilds DOS partitions and restores other features of the LAN after a network crash or shutdown.

It can provide recovery for all the servers in a multiserver network, even those servers that aren't attached to a backup tape drive.

"NetWare 4 is a challenge for disaster recovery. It has always been a real pain ... because you might end up reinstalling old software."

**- Ken Lowrie,
HiTecSoft Corp.**

Seagate's chief rival is Cheyenne Software, a division of Computer Associates International, Inc. in Islandia, N.Y., which makes ARCserve for NetWare and ARCserve for Windows NT.

The Cheyenne products require the purchase of a client agent to work in a mixed NetWare/Windows NT LAN, Cheyenne officials and analysts said.

DAILY BACKUP NEEDED

Intelligent Disaster Recovery requires the use of Backup Exec, Seagate's daily backup software.

When Intelligent Disaster Recovery runs, it restores DOS partitions in minutes, which can save hours, according to Lowrie and another tester, who plan to keep using it.

"NetWare 4 is a challenge for disaster recovery. It's always been a real pain, because you might lose your local ID database or passwords and end up reinstalling old software," Lowrie said.

Alex Molnar, a network engineer at Personal Systems Plus, Inc. in Cleveland, said he envisions using the Seagate product to restore the LAN after hardware upgrades. Using it would cut the six-hour chore in half, he said.

Intelligent Disaster Recovery will cost

\$495, plus \$495 for a single-server version of the required Backup Exec for NetWare. That compares with Cheyenne's starting price of \$445, which doesn't include the \$495 client agent needed for cross-platform networks.

Paul Mason, a storage analyst at Inter-

national Data Corp. in Framingham, Mass., said disaster recovery is more important than people realize, even in a PC network.

Finding ways to make the process easier is important, because the average PC LAN shop hasn't developed a good

process, Mason said.

"They haven't really thought it through, and they back up everyday without checking to see if they can recall what's backed up. And usually there's a local domain expert doing it who's not terribly well-trained in disaster recovery," Mason said. □



Design business equips users with removable Jaz drives. Page 67

It's almost Year 2000...

**Do you know
where your
computer
programs are?**



You've probably heard about many companies which have already spent millions of dollars in a desperate attempt to correct Year 2000 program bugs.

Or are you one of them?

Many companies have attempted the traditional "assessment" method of locating dates in their programs (impacted lines) and trying to dig their way out from there.

Here's a better idea: Find out how much of a problem you actually have before committing too much money and other resources to such a project.

Jennings Information Systems Date Failure AnalysisSM can isolate Year 2000 "failure points" in your programs. Armed with that information, you can embark on a renovation plan based on facts, not anxious conjecture. This could not only save you some serious money and time, but also get Year 2000 compliance within your grasp before the deadline hits.

We can even help Year 2000 efforts that are underway but stalled in the "army of programmers" methodology.

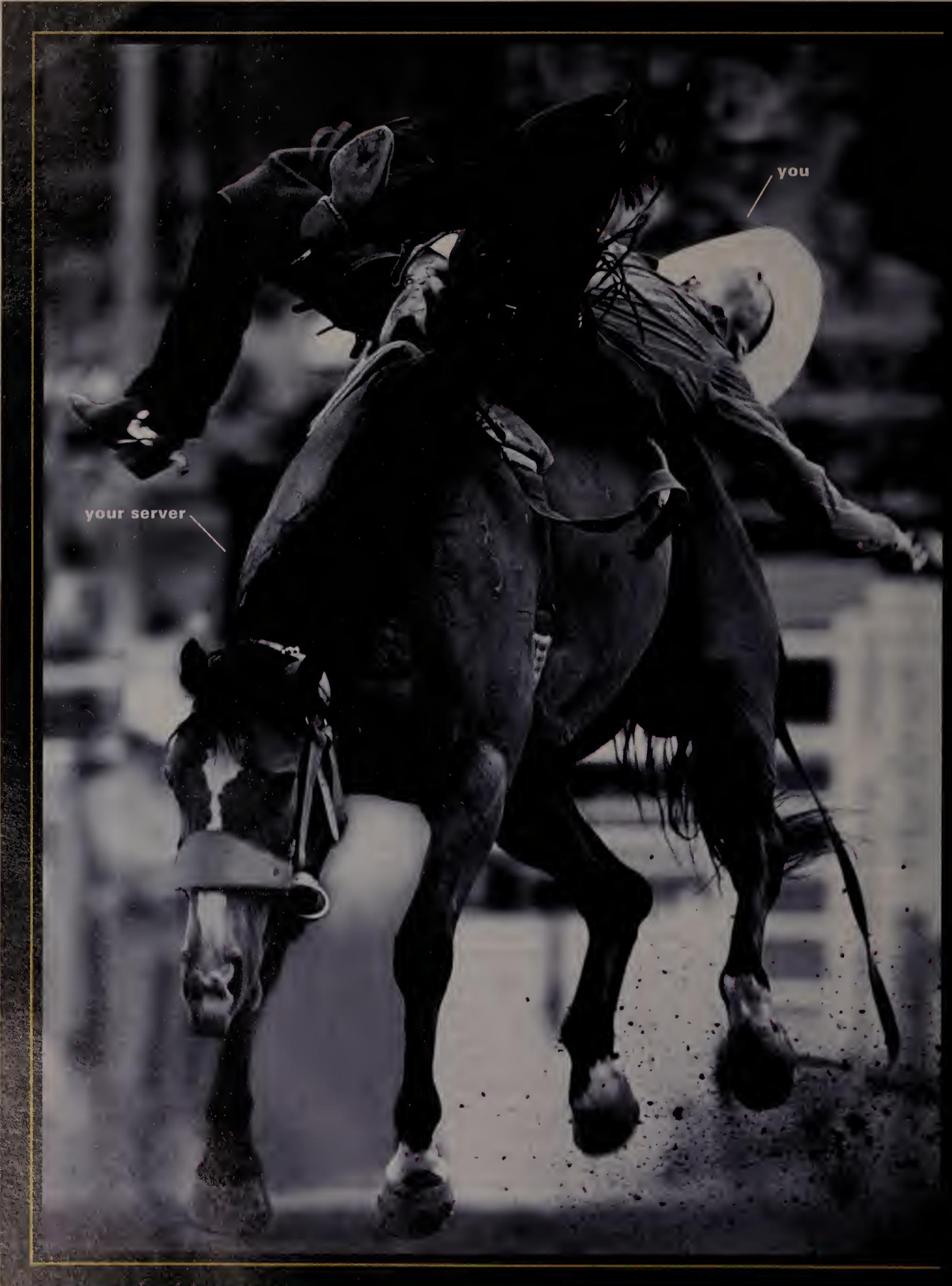
Call Jennings Information Systems Consulting today, and find out how our Date Failure AnalysisSM can help your organization celebrate the Year 2000, not dread it!

JENNINGS
INFORMATION SYSTEMS CONSULTING

Phone: 603-224-6885

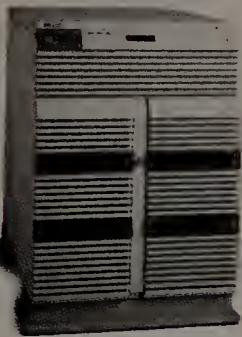
Fax: 603-228-1531

Email: yr2000@jisc.com



Either you need a new job. Or a new server.

Are you managing your network, or is your network managing



HP NetServer LX Pro

you? With the ever-increasing assortment of

products, architectures and operating systems,

it's sometimes hard to tell. Which is all the

more reason to get an Intel® Pentium® Pro

processor-based HP NetServer. Between our vast enterprise

experience and an array of management software, HP NetServers

are engineered to make even the most unruly network

manageable. The HP NetServer Navigator CD-ROM,



which includes HP NetServer Assistant and the industry-leading

HP OpenView Professional Suite for Windows®, simplifies

installation, configuration and management. Plus, the optional

HP Remote Assistant card allows for remote management

and troubleshooting. Show your network who's in charge.

Please visit www.hp.com/go/netserver or call 1-800-533-1333, ext. 2359.



IBM charts storage course with Seaside

By Tim Ouellette

BY NEXT YEAR, users of IBM's disk and tape storage devices may have more flexibility in how they add features to their systems.

IBM last week unveiled its Seaside

storage architecture, which was designed to let users run existing IBM storage products while quickly bolting new software features and functions onto the IBM disk or tape subsystem.

Doing so will pull most of the storage-related data manipulation and move-

ment, which now clogs enterprise networks, into the storage device.

"If you need to get data a lot closer to the users and if your users are on different platforms, you need a flexible architecture," said John McArthur, an analyst at International Data Corp. in Fram-

ingham, Mass. "With Seaside, users can now focus on function instead of hardware."

Although most of the Seaside building blocks — including backup software, SSA 7133 disk drives and Magstar tape systems — are in use today (see chart), Seaside won't be truly realized until major new products see the light of day by year's end. And mainframe-based Escon controllers for Seaside won't be available until next year, sources said.

Several users interviewed by Computerworld said they were familiar and supportive of the individual IBM products but were unsure of how they would approach knitting them together.

A SEA OF CHANGE

IBM's Seaside storage strategy adds storage software functions to these building-block products:

- Adstar Distributed Storage Manager software
- SSA 7133 disk arrays
- Magstar tape drives
- RS/6000 RISC processors
- IBM serial adapters

Specific Seaside deliverables in the next year include the following:

- Mainframe disk array support for Unix and Windows NT data.
- 7133 disk arrays that can store Unix, AS/400 and Windows NT simultaneously.
- A global storage resource-management tool.

One Seaside product already on the streets is the Virtual Tape Server (VTS), which bundles a front-end disk array, back-end tape drives and backup software to more efficiently archive data and recover it quickly [CW, June 2].

"It is something we wanted for a long time, which vendors could never provide before," said Richard Adams, vice president of technical systems at United Services Automobile Association in San Antonio.

"VTS lets us put more than one data set on a single cartridge, which cuts down on tape mounts and is very cost effective," Adams said.

IBM's effort is an attempt to keep pace with storage rival EMC Corp. in Hopkinton, Mass. EMC has added a number of software tools and data sharing features to its Symmetrix disk arrays in the past two years.

The silver bullet in IBM's plan is its use of PowerPC RISC processors, already found in RS/6000 and AS/400, as storage controllers. This makes them less expensive and more readily available than custom-made controllers, McArthur said.

Support for Unix on top of the RISC processor lets users quickly port common storage management tools onto Seaside products, IBM officials said. □

IF WE COME ON A
BIT STRONG, IT'S
BECAUSE WE NEVER
FORGET WHO
WE'RE TALKING TO.



© 1997 Computerworld, Inc.

At Computerworld, our editorial policy is simple.

If a story is useful and accurate, it runs. If it's also blunt and a bit pugnacious, all the better. Our goal is to provide you, our reader, with the truth.

As IT Leaders, we know you're under siege. 1200 thankless clients. Technology that changes every 18 months or so and impacts all you've painstakingly built. New products you need evaluated immediately.

Changes in corporate strategy that could impact your entire department.

One thing you can count on. Computerworld. In our pages you get solid reporting, incisive industry trends, timely news, unflinching editorials, unbiased reporting. We know you need this information to evaluate new products. To get a candid view of emerging technologies. To find out the inside story on corporate strategies. To decide whether to jump ship or stay in your current job. To get

the edge on your competition.

Get the kind of straightforward, impartial reporting you can count on. Because we never forget who we're talking to.

Order today and you'll receive 51 information-packed issues of Computerworld.

Call us at 1-800-343-6474 or visit us on the world wide web at www.computerworld.com. To order by mail, use the postage-paid subscription card bound into this issue.

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

Building a Data Mart?

Just Because You Use Good Parts
Doesn't Mean It Will Fly...



Multiple Vendors... Multiple Headaches

Today, many data mart projects have a tough time getting off the ground because they're built with software tools from so many vendors. Even the most carefully designed data mart won't fly if the components haven't been designed, tested, and optimized to work with one another. And what happens when you have a problem? If something isn't working right, it's always going to be "the other vendor's fault." The solution? A SmartMart™ data mart from Information Builders.

Think SmartMart™. The Smarter Data Mart



proven and affordable package. You get tools for data extraction and movement, transformation, multi-dimensional data storage, reporting and analysis, Web access, and administration. You'll also

SmartMart provides all the tools and services you need to build, use, and manage a data mart...in one

get the consulting services you'll need to guarantee a fast, trouble-free implementation. And because SmartMart is a complete, single-vendor solution, all components are fully tested to work together so you avoid the cost and delays associated with integrating technologies from multiple vendors.

Make the Smart Move

For complete information on our SmartMart data mart program, including a free white paper, visit our Web site or call (800) 969-INFO.

CALL THE BUILDERS

Information
Builders



Apparently, your e-mail has

been read.

Arriving a day early. Would like to see the final plan.

HITACHI

Introducing
THE HITACHI VISIONBOOK ELITE.
ULTRA THIN. VERY LIGHT. PANORAMIC SCREEN.

Its astonishing how a word from you really gets the wheels moving back at corporate headquarters. Of course, given how business is done these days, you're often not there to put out the word in person. Which is why Hitachi Mobilized Computing™ technology is a business tool of strategic import. The Hitachi VisionBook Elite™ delivers it in a package so light and so thin you'll take it wherever business takes you.

With Hitachi's extra large 13.3" screen, hyper-fast x2™ modem, and slim media filebase, its functionality and communications abilities are uncompromised. Including access to information and graphics on

the Internet or your company server.

The Hitachi VisionBook Elite. Roam the planet as you must, your influence at the home base remains undiminished.



pentium®

SIGNIFICANT FEATURES:

- Extremely thin (1.4") and light (5.15 lbs).
- Super large 13.3" TFT display, XGA resolution.
- 166MHz Intel® Pentium® processor with MMX™ technology, 512K L2 cache.
- Hyper-quick U.S. Robotics® x2™ modem.
- Full-size keyboard.
- Detachable filebase with 10x CD ROM and 3.5" floppy drive.
- 16MB EDO RAM, 2.1 GB hard drive.
- Optional extended life Lithium-Ion battery.
- Optional advanced port replicator.

HITACHI
MOBILIZED
COMPUTING™

Call 1-800-Hitachi
www.HitachiPC.com

Texas applies brakes to online license data

By Sharon Machlis

SHOCKED BY A World Wide Web site that offers driver's license data on millions of residents, the Texas Legislature is trying to block any such future postings on the Internet.

The site, www.publiclink.com, offers a database that can be searched for names and license-plate numbers and can display all licensed drivers at an address or ZIP code.

Texas lawmakers this month approved a bill that requires a pledge from anyone

seeking motor-vehicle records from the state that they won't post the data on the Internet unless they have the subjects' permission.

Supporters said it is the only way to maintain people's privacy and safety. But critics said the issue should be which

records to make public, not to attack one type of media.

"Barring information being on the Internet per se, I think, is the wrong policy," said Gerry Berman, executive director of the Center for Democracy and Technology in Washington. "We want to protect privacy on the Internet, but we also want the Internet to be accessible and not be discriminated against in terms of media and commerce."

Democratic Rep. Ruth Jones McClelland filed the bill after a complaint by a woman who had moved to Texas to escape an abusive ex-husband and was frightened that her new address was easily available. The bill was awaiting action by Gov. George W. Bush.

"Barring information being on the Internet per se, I think, is the wrong policy."

- Gerry Berman, Center for Democracy and Technology

Lauren Weinstein, who moderates an Internet privacy forum, blasted the site. "No need for the sickie who harasses young women to follow his next lovely target all the way home," he wrote. "And that guy you accidentally cut off on the freeway? He may not have bothered you at the time, but he can come by to 'visit' you later, perhaps in the middle of the night while you're sleeping. Use your imagination for more interesting scenarios."

Officials at Public Link Corp., which runs the site in Dallas, couldn't be reached for comment.

Ron Plessner, an attorney at Piper & Marbury LLP in Washington who represents the Lexis-Nexis database firm, said governments must "decide whether or not a record should be publicly available. ... It's bizarre to say I can fax it to you but I can't put it on the Internet."

The Texas woman who complained about the site had paid extra money to the state so her address wouldn't be published on any paper versions of license data released to the public. But the correct address nevertheless was included in computer tapes sold by the state.

Plessner said the problem wasn't the Internet but the state, which failed to correctly follow "opt-out" procedures. "It's a cop-out response to some current headlines," he said of the bill. □

When will her education
be as technologically
advanced as her toys?



Technology. It's moving fast. And our schools are falling behind. Why? Lack of funds. Lack of resources. Lack of expertise. That's where your company comes in. By supporting Tech Corps. A grassroots effort to enhance teaching and learning through technology. And give students the advantage they need to get ahead in the game of life. Discover the rewards of becoming a Tech Corps Corporate Sponsor. 508/620-7751 • <http://www.usctc.org>
America needs to know.



Organizations already providing national sponsorship include AT&T, Bell Atlantic, Comshare, Digital Equipment Corporation, IBM, MCI Foundation, National Education Association, National Education Association Foundation (CTIA), and USCTC.

TECHNO

TOYS

**Win a Cool Prize
Every Week!**

**Enter the TechnoToys
Sweepstakes in
Computerworld
Marketplace**
(following IT Careers)



Data warehouses are becoming

strategically vital to a business's

success. But the truth is, many are

outgrown right after they're delivered.

They're simply overwhelmed by

ever-increasing amounts of data. Unless

you have EMC Enterprise Storage.[™]

It's the only solution that keeps

mission-critical information available,

protected and timely, even in the

face of explosive growth. And it's

the only way to refresh data from

multiple sources without sacrificing

performance. To find out how

a data warehouse with EMC

Not Without EMC Enterprise Storage They Aren't.

Enterprise Storage can

help you instantly

respond to the ever-changing

needs of your business,

call 1-800-424-EMC2, ext. 124, and

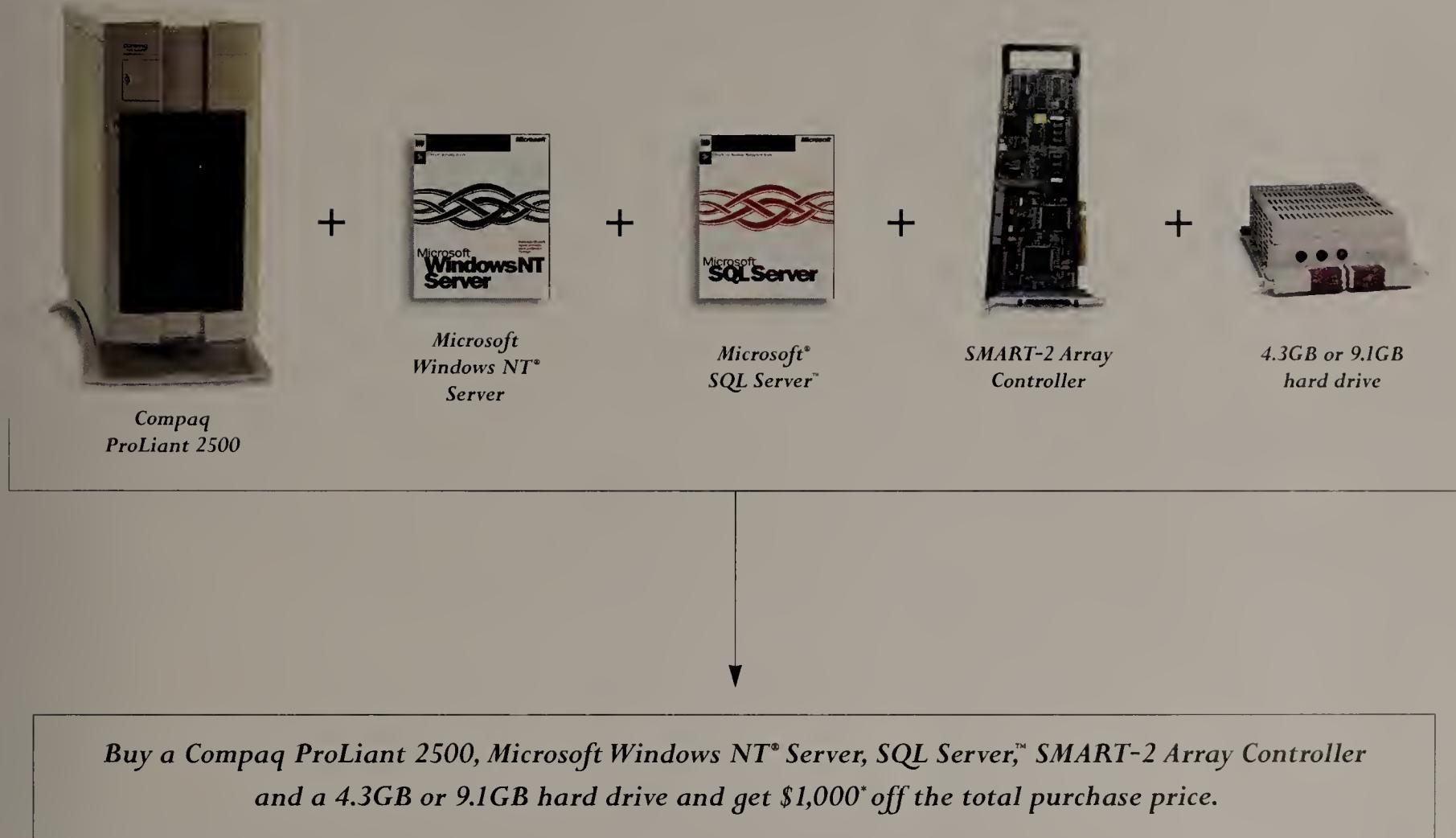
we'll send you an interactive CD-ROM.

Or visit us at www.emc.com.

EMC²
The Enterprise Storage Company

{ ANYTIME TWO COMPANIES LIKE
COMPAQ AND MICROSOFT
get together
YOU CAN EXPECT A LONG LIST OF
IMPRESSIVE RESULTS. }

SAY WE START WITH \$1,000 IN SAVINGS.



THIS *exceptional* OPPORTUNITY FOR SAVINGS AND EXTRA VALUE IS *only* AVAILABLE UNTIL JULY 31ST.

See your reseller, or for the one nearest you call 1-800-853-9526, or visit us at www.compaq.com



*All prices and price reductions shown refer to U.S. estimated reseller prices. Actual reseller prices may vary. Free offer with purchase of qualifying product from a participating reseller from 4/28/97 to specified end date, while supplies last. Offers not valid on Compaq refurbished products. All others are subject to product availability, and are valid only in the U.S. Compaq reserves the right to change, alter or cancel these programs at any time without notice. ©1997 Compaq Computer Corporation. All rights reserved. Compaq registered U.S. Patent and Trademark Office. ProLiant is a registered trademark of Compaq Computer Corporation. Microsoft, Windows NT, and Microsoft SQL Server are registered trademarks of Microsoft Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies.

Dazel output manager makes diverse data delivery for IS

By Patrick Dryden

INFORMATION SYSTEMS managers may be able to meet users' diverse data delivery needs without busting their budget to hire Unix gurus and webmasters.

Dazel Corp. next month will offer a version of its unique output manager that runs on Windows NT Server—not just Unix systems. And now, this transparent data juggler—which captures print jobs and reroutes them to fax machines, electronic mail, pagers or specified printers—also will publish output to a companion World Wide Web server for browser access.

"NT support means we can add more servers, and the Web destination should expedite delivery to internal groups and external customers," said Dazel user Kelly Sjelin, a report management analyst at Carlson Cos. in Minneapolis.

Several departments in the travel and hospitality corporation are pursuing their own Web delivery projects, Sjelin said, "but now, Dazel's servers could be the way to unify us all."

Upgrading to Version 3.0 of the Dazel Output Server and

adding the MetaWeb server would cost less than developing Web publishing applications in-house, said Clarke Knorr, manager of global systems deployment planning at Nortel, Inc.'s IS department in Toronto.

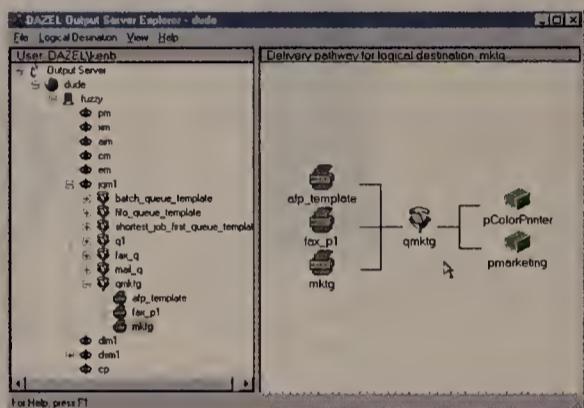
About 4,000 users at Nortel manufacturing sites worldwide rely on Dazel's system to select the proper printer for hard copies of a design they select from a central server library.

Here is how it works. First, an administrator defines delivery methods for members of one group, such as the sales department. Then anyone can direct a sales report to that group.

MULTIPLE TARGETS

The Dazel Output Server translates print-stream data from a mainframe or server source for each form of delivery. It prints the report on printers throughout the network, transmits it to some members via fax, E-mail or pager and posts it to individual in-boxes on the MetaWeb server.

MetaWeb notifies those users that the new report is available. "Nobody has a competitive product for complex document distribution," said Grey Held, associate editor of *Hard Copy Observer*, a print industry journal published by Lyra Research, Inc. in Newtonville, Mass. Despite the new Web option, Dazel's software will remain "a base-level back-end processing tool for IS shops" because its strength lies in managing print queues, said Bobby Cameron, a senior analyst at Forrester Research, Inc. in Cambridge, Mass. □



Administrators define one destination for a group, then the Dazel server translates output for delivery

Other groups seek a similar way to distribute reports internally and externally and to standardize Web server efforts on off-the-shelf products.

If they put those efforts on the MetaWeb server, "we wouldn't have to develop applications to do the translation and push the information out," Knorr said.

Mobile users help laptop sales

By Patrick Thibodeau and Wylie Wong

THERE ARE NO dead ends in sight for mobile computing revenue, which is expected to soar in the next few years, according to a new study by market research firm Frost & Sullivan, Inc.

That is also the case in the notebook market, where traditional desktop powerhouses are fighting for the top market spot.

Revenue in the mobile computing market totaled \$27.2 billion in 1995 and grew 35.3% to \$33.5 billion last year. The mobile computing market, which includes portable computers, pen computers, palmtops and peripheral products, is expected to hit \$99.9 billion in revenue by 2003.

"It's a much more mobile so-

cietry," said Michael J. Palma, an analyst at Mountain View, Calif.-based Frost & Sullivan who worked on the report. "You have a lot more people either working from home [or] working at customer sites."

FIERCE COMPETITION

Revenue growth also has been spurred by advances in technology, including longer battery life and improved screens, storage capacity and processing power.

The mobile computing industry is characterized by fierce competition, component shortages and ever-shorter product cycles, according to Frost & Sullivan.

In the equally competitive notebook market, Toshiba America Information Systems, Inc. is still first in the U.S., but Compaq Computer Corp. is a

close second, another new study shows.

Toshiba has 33.8% of the market, Compaq has 25.6% and IBM has 20.8%, according to Computer Intelligence InfoCorp in Santa Clara, Calif.

Meanwhile, Xircom, Inc. is among the vendors trying to keep all those mobile devices connected. The company is offering a 56K bit/sec. modem PC Card through an upgrade program. Participants can trade in any modem or combination PC Card—a card that connects to either a LAN or modem—for a CreditCard Modem 56, which will be released this summer.

The program includes a free flash upgrade to the final 56K bit/sec. standard. Upgrade prices range from \$99 to \$249 for 20 units, depending on modem configuration. Users can register for the upgrade at the company's World Wide Web site (www.xircom.com) until July 31. □

Compaq tailgates HP

► Analysts say workstation users will benefit

By Wylie Wong

JUST EIGHT months after plunging into the personal workstation market, Compaq Computer Corp. is challenging Hewlett-Packard Co. for market leadership.

"They're neck and neck," said Keren Seymour, an analyst at International Data Corp. (IDC) in Framingham, Mass. "They [are] competing on price [and] performance, and that's good news for anyone who wants to buy a workstation."

According to a recent IDC study, Palo Alto, Calif.-based HP ranked first with 96,000 personal workstations sold last year. Compaq, in Houston, was second with 92,300 units sold. Ranked third and fourth, respectively, were Digital Equipment Corp. in Maynard, Mass., and Intergraph Corp. in Huntsville, Ala.

Dataquest's 1997 first-quarter figures were similar: Of the 61,000 personal workstations with Windows NT shipped, HP ranked first with 37.3%; Compaq placed second with 29%; Digital ranked third with 14.4%; and Intergraph was fourth with 12.4%.

So how did Compaq catapult itself so close to the top so quickly? Compaq is offering products and prices that are comparable to HP, analysts said.

"It's a phenomenal achievement," said Peter ffoulkes, an analyst at Dataquest in San Jose, Calif. "They've taken the trouble to put the necessary investment in place, have a good business plan and execute it. They've built a good product, formed the right relationships with vendors and recruited the right class of resellers. It helps that they're well-established and sell to corporate markets."

IT'S IN THE NUMBERS

Compaq's first personal workstation—the Professional Workstation 5000 with Windows NT and a Pentium Pro processor—sold 12,300 units last year, Seymour said. The remaining 80,000 "workstations" sold actually were Compaq's high-end PCs, the Compaq Deskpro 4000 and 6000, she said. HP shipped 96,000 Vectra workstations.

IDC's figures include estimates of high-end PCs that are used as workstations. High-end PCs counted as personal work-

stations run Windows NT and have a 200-MHz Pentium Pro processor and high-end Matrox Graphics, Inc. graphics, Seymour said. Dataquest, on the other hand, counts only machines that are marketed as workstations.

In all, 825,000 personal workstations were sold last year, according to the IDC report. Other PC vendors were included in the overall total, but their individual statistics weren't included in the study because they didn't have workstation marketing strategies at the time, Seymour said.

"Compaq has taken the second step, another step ahead of other Wintel [workstations]."

— Peter ffoulkes
Dataquest

Analysts expect that IBM will be a serious contender in the personal workstation market soon, possibly ranking in the top five. IBM only in March began to sell personal workstations with Windows NT, called Intellistations.

HP and Compaq will continue to duke it out for the personal workstation market lead this year, with no clear winner emerging, analysts said.

Compaq last week announced two new models and a deal with software vendors that plan to optimize their applications for the workstations. The new Workstation 8000 can hold up to 3G bytes of RAM.

Previous professional workstations competed with low-end "traditional" workstations with Unix, ffoulkes said.

But the Workstation 8000 allows Compaq to compete with traditional midrange Unix machines, he said. "Compaq has taken the second step, another step ahead of other Wintel [workstations]," ffoulkes said.

Analysts expect HP eventually to respond with its own product announcements.

Sun Microsystems, Inc., which sells "traditional" workstations that use Unix, remains the leader in the overall workstation market, Seymour said. □

WHEN WORLDS CONVERGE,

COMPANIES

PARTNER.

With more and more networks, applications, and agent technologies entering today's enterprise, Tandem and Computer Associates have partnered to take control of this cross-platform environment by delivering the "best of breed" in enterprise management. This new "business-critical" level of control combines the superior heterogeneous, end-to-end management capabilities of CA's Unicenter TNG™ with Tandem's established reputation in reliable, scalable clustering technology. Visit us at www.tandem.com to learn more about this alliance. Or call 1-800-NONSTOP, ext. 8101 to receive our new brochure "Now Business-Critical Computing Is Manageable."



Business-Critical Management



© 1997 Tandem Computers Incorporated. All rights reserved. Tandem and the Tandem logo are trademarks or registered trademarks of Tandem Computers Incorporated in the U.S. and/or other countries. The Computer Associates logo and Unicenter are registered trademarks and Unicenter TNG is a trademark of Computer Associates International Inc.



**THERE WAS,
IN FACT,
A REASON
THEY CALLED IT
THE PERSONAL
COMPUTER.**



Oh yeah. There's a person sitting in front of it.

Oftentimes, that person is a very special person called an employee. Someone who walks through your doors in the morning and back out in the evening (sometimes, very late in the evening). Someone who will rewrite paragraphs in the shower. Or not. Someone who will work through lunch to make something just right. Or not. Someone who will care. Or not.

It is people who define business. It is people who will determine whether your company will be just good or damn good or great. We believe that given the responsibility and the right tools, the people who work for you will do extraordinary things. For millions and millions of people, the right tool is the computer.

What makes the computer *personal* is a program called Microsoft® Windows®..

Windows makes computing easier, so more people can actually use a PC. It is intuitive and simple and familiar, and recognizable from computer to computer, person to person.

Windows makes computing more powerful. More than *one hundred thousand* programs have been written for the Windows platform. So you can type words and calculate numbers, create presentations with animation and sound and video, do 3-D CAD design, send a message to the other side of the office, send a message to the other side of the world, manage inventory and payroll, draw, find things on the Internet, create your own intranet, build a database, manage projects, hold live video meetings on screen and check your spelling.

And Windows makes computing travel. You can take your powerful programs, travel 3,000 miles, use them, plug your notebook computer into a phone jack and work as if you were sitting at your desk.

Windows makes the computer a tool your people can use. And it is, when all is said and done, your people who are going to make the difference.

Computer Industry

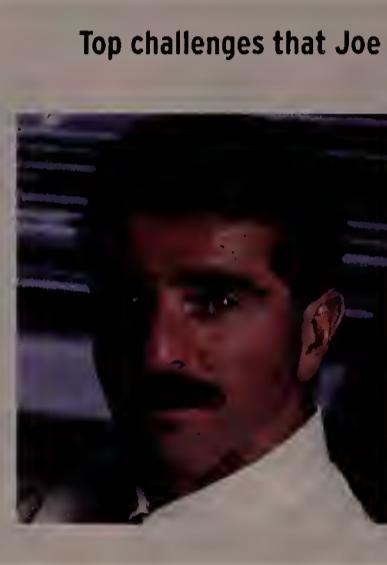
Marengi has his eye on a full-service Dell

► Vendor targets major corporate customers

By Laura DiDio and April Jacobs

WHEN JOE MARENGI joins Dell Computer Corp. next month to help jump-start its business with major corporate accounts, he'll have his work cut out for him.

Marengi, who resigned as Novell, Inc. president and chief operating officer June 6, will join Dell as senior vice president of the company's relationship group. Insiders are hoping



Top challenges that Joe Marengi faces at Dell:

- Beef up the service and support organization
- Boost sales to corporate customers to catch up to rivals Compaq and IBM
- Promote the new Premiere Pagers Internet-based service and sales program

Marengi will help the Round Rock, Texas-based PC vendor boost efforts to woo corporate customers, particularly as it attempts to expand its horizons into a full-service company to compete with service and support giants such as IBM and Hewlett-Packard Co.

"I'm looking forward to it," Marengi said from his home in California. "Dell has a great sales organization in place. Now it's a question of expanding the existing worldwide sales and field activities and major accounts' licensing programs."

As senior vice president of

Dell's relationship group, Marengi will oversee the company's global enterprise program, which provides large customers with a single point of contact. He will also head the corporate accounts group and the mid-size-business group.

Marengi arrives on the scene as Dell faces the challenge of remaking itself into a full-service vendor.

The company recently announced an enhanced Internet-based service and sales program, called Premiere Pages, that provides customers with customized World Wide Web pages that track hardware and preconfigured software purchases. It also intends to offer customers leasing programs. □

Calif. seeks to bar new 'net taxes

By Patrick Thibodeau and Mitch Wagner

CALIFORNIA lawmakers have launched a pre-emptive strike designed to protect Internet service providers from the tax man.

Legislators introduced a bill this month to bar the state's taxing districts from imposing special taxes on Internet commerce and Internet connectivity.

The proposed California legislation is modeled after the federal Internet Tax Freedom Act, pending in Congress. That bill would set a two-year moratorium on Internet taxes.

The federal and California bills don't declare the Internet a tax-free zone. Goods, services and information sold over the Internet would still be subject to nominal sales and other taxes. What is forbidden is the imposition of additional taxes on transactions just because they take place on the 'net. Also forbidden are special taxes on Internet connectivity.

"It can be very complicated for the young entrepreneurial companies that are just in their infancy to be responsible for collecting taxes and paying taxes in multiple jurisdictions," said Bob Hines, an aide to state Assem-

blyman Jim Cunneen (R-Cupertino), who co-sponsored the California legislation. That bill is also sponsored by Assemblyman Ted Lempert (D-Redwood City).

The proposed legislation comes as governments increasingly look to the Internet as a source of revenue. Tennessee levies taxes on Internet services, and Texas, Massachusetts and New York have laws taxing "the sale of electronic services" [CW, Oct. 21; June 16].

GROWTH INHIBITOR?

John Nylander, director of information services at men's clothing International Male in San Diego, welcomed the Internet tax protections. "Taxes would pose an impediment to growth of the Internet," Nylander said. International Male is a unit of Hanover Direct, Inc., a catalog company.

But the Internet tax shields aren't universally popular. Dwight Stenbakken, legislative director of the League of California Cities in Sacramento, a state government lobby group, said the proposed laws provide a special protection for a single industry at a time when all governments need to look at new sources of revenue.

The chief source of local government revenue are taxes on hard goods. And sales of hard goods have been flat recently, while other sectors of the economy have been growing, Stenbakken said. For new revenue, governments need to be able to tax intangibles and services, including the Internet, he said. □

Informix struggles as Oracle basks in profits

► CEO White seeks new marketing strategy

By Craig Stedman

CALL IT A tale of two database vendors.

While Oracle Corp. basked in the glow of a 35% increase in fiscal fourth-quarter profits, rival Informix Software, Inc. last week was busy trying to find a break in the clouds.

Informix CEO Phil White tried to convince skeptical financial analysts that the company is on the road to recovery following its stunning \$140 million first-quarter loss [CW, May 5].

SKEPTICS REACT

But some of the analysts who listened to White's pitch in New York remained unconvinced, despite his promises of a 10% workforce reduction and several other moves aimed at cutting costs and boosting sales (see chart).

Oracle and Informix are "as different as day and night, particularly in terms of execution," said James Moore, an analyst at Alex. Brown & Sons, Inc. in Baltimore. "The execution at Oracle is brilliant, especially at the field level, and the execution at Informix is at the other end of the continuum."

Thanks to a 78% jump in sales of packaged applications, Oracle's \$360 million fourth-quarter profit met Wall Street expectations even though database sales were below analysts' forecasts, Moore said. By contrast, much of what White had to say "sounded fishy," he said.

Melissa Eisenstat, an analyst at Oppenheimer & Co. in New York, agreed that key parts of Informix's recovery plan "just don't seem to hold water." For example, in the data warehousing and Windows NT markets, Informix is "really late to the game," Eisenstat said.

Informix officials said White reiterated earlier comments that he hopes the Menlo Park, Calif., company will be profitable or at least break even by this year's fourth quarter. To achieve that goal, Informix is reinvigorating

INFORMIX'S ACTION PLAN

- Cut staff of 4,600 by 10% at end of first quarter
- Reduce expenses to third-quarter 1996 levels
- Arrange new financing in case cash runs short
- Give incentives to sales force to close deals during first two months of a quarter
- Strengthen marketing and benchmarking of OnLine relational databases

FREE! PowerChute® plus software
with all 120V Smart-UPS®.

All 120V Smart-UPS® now ship with FREE PowerChute® plus software!

Protect ME!
APC

Smart-UPS now ships with Free PowerChute® plus! LAN, WAN and web servers all benefit from new Smart-UPS® Network Bundles... Now the most reliable power protection solution comes in one box!

YES! Please send me information about new Smart-UPS Network Bundles.

NO, I am not interested in Smart-UPS Network Bundles at this time.
But I would like a FREE Handbook* Demo Disk*

Name: _____
Title: _____ Company: _____
Address: _____
City: _____ State: _____ Zip: _____ City: _____
Phone: _____ Fax: _____
Brands of UPS used: _____ # _____
Brand of PCs used: _____ # _____
Brands of Servers used: _____ # _____

* Allow 6 - 8 weeks for delivery.
Please fill in all information completely for prompt service.

APC
(888) 289-APCC x7086
Fax: (401) 788-2797
<http://www.apcc.com>

PC MAGAZINE EDITOR'S CHOICE
"Our Editor's Choice goes to APC's Smart-UPS 1000 for its inherent flexibility and excellent software."
—PC Magazine

©1997, APC. All Rights Reserved. All trademarks are property of their owners. SU03EBRC

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE



DEPT. BRC-A8-RM
132 FAIRGROUNDS ROAD
PO BOX 278
WEST KINGSTON RI 02892-9920

there is a band of people who
live in your neighborhood.

They roam the streets.

And come into your businesses.

Some people claim they are prophets.

Others say they are maniacs

who have so many formulas

running through their heads

and scribble so many configurations

on the backs of envelopes and lunch receipts.

They advise.

Counsel.

They also deliver.

And then they come back.

They come back because

technology doesn't stop.

So they can't.

They work in partnership with Compaq.

They are your local Compaq Authorized Resellers,

and that's their job.

To find your Compaq Authorized Reseller,

call 1-800-410-8458.

COMPAQ



OPINION

Mentor this! Like many of the women involved in the high-tech field,

I read the stories coming out of the recent Women in Technology International (WITI) conference with avid interest. But I found myself wincing every time I saw that cliched advice to "find a mentor" to ensure success. And my eyes were definitely glazing over whenever that accursed glass ceiling got hauled out for yet another round of lamenting.

To me, these '80s-era concepts carry a heavy load of defeatist psychobabble. They perpetuate an image of women as more needy in the workplace than men and dependent on special help, as though we were visitors from another planet who couldn't quite translate the native language without a guide.

Well, let me venture into the wilds of political incorrectness and suggest that we just say no to the quest to find a mentor. Instead, find several people, team up with them and learn a whole lot more. Develop leadership qualities by showing what you can do, not by following someone else's lead.

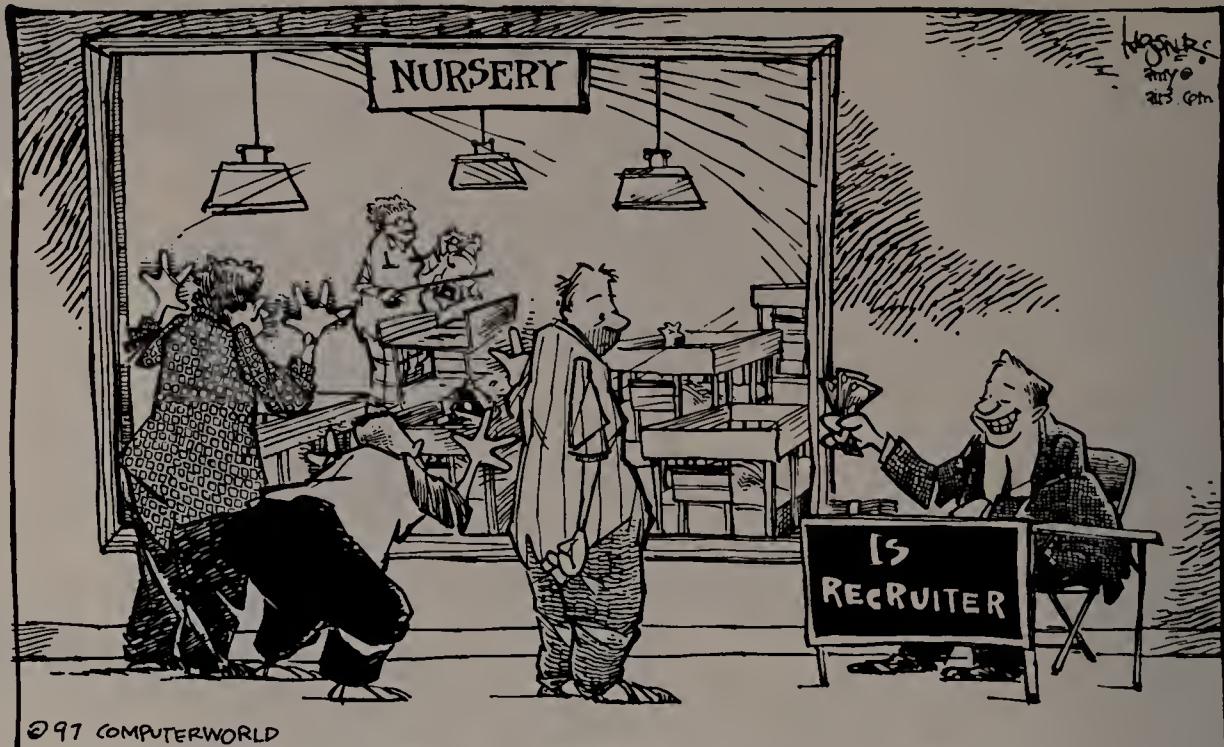
The '90s litmus test of good managers should be how well they mentor their entire staff.

Women in IS should be applying their energies to extending their personal networks of contacts and by going after the tough, high-profile projects to show their capabilities. A lot of the news coverage out of the WITI conference focused on women bonding over shared experiences and venting about dealing with male executives. I hope that behind the scenes these women were getting their money's worth by making useful contacts and swapping business strategies.

When WITI polled 500 female IS professionals and asked if — given a background and capabilities equal to other candidates — they believed they had an equal opportunity to be a CEO, nearly one-third of them said "yes."

Frankly, I'm rooting for that bunch rather than the 51% who said "no" or the 20% who ducked the question entirely. With that kind of attitude, they're going to need more than a mentor.

Maryfran Johnson, Executive editor
Internet: maryfran.johnson@cw.com



© 97 COMPUTERWORLD

LETTERS

COMMENTARY

Netscape comes down to earth

DAVID MOSCHELLA

Has anyone heard the word "Netscape" recently? Is it just me, or is 1997 turning into a black hole for the once-time Web wunderkind? Looking back over the past 12 months, it's clear that the company has lost more than just two-thirds of its stock value.

When the stock market decided 16 months ago to value Netscape at \$7 billion, the company suddenly had a lot to

live up to. Certainly, you couldn't have a \$7 billion browser company.

Netscape was clearly right to enter the server market. Where it has gone astray is in trying to become a full-service intranet provider. That made cool relations with IBM/Lotus and — until recently — Novell inevitable.



now stands sharks closer

Microsoft doesn't permit competition to exist for very long

THE COMMENTARY by David Moschella on what Netscape needs to do to stay in the running ("Netscape comes down to earth," CW, April 21) suggests getting the government to stop Microsoft from dumping Explorer.

Some years ago, the Japanese were accused of dumping their cheap chips on the U.S.

Now, Microsoft is dumping Explorer in the U.S. deliberately to put Netscape out of business.

This is unethical and criminal, and yet nothing is being done

about it.

Netscape may have had a monopoly on the browser market, but it didn't stop companies from developing plug-ins to enhance it.

We need to stop Microsoft because it permits no competition to exist for very long.

And that is no hypothetical guess, crystal-ball gazing on my part. It's in the news every week.

Colin J. Schmidt
EDI coordinator
Snappy Car Rental
Bixby, Okla.

Forced march to Office 97

COMPUTERWORLD totally missed the single greatest reason for such a large number of upgrades and purchases of Office 97 ["Users shrug off Office 97 fears, migrate in droves," CW, April 28]: Microsoft will not sell or site license Office 95.

My company wants nothing to do with Office 97, but we are stuck with it on all new PC purchases, and we can't buy additional Office 95 licenses to replace them. We do not use all the new features and find it very unstable.

The lack of backward compatibility is also a major problem for us.

We also use Lotus Notes and do not need the collaboration features mentioned in the article. For us, there is absolutely no benefit or desire to use Office 97.

We simply are not given any choice, and that puts us at odds with Microsoft.

Scott Sawdy
Farmington Hills, Mich.
sgsawdy@electro-matic.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet:

letters@cw.com. Please include an address and phone number for verification.

It doesn't have to be all or nothing with push technology

IN YOUR April 28 article, "Intranet advocates: Don't 'push' users; let 'em browse," I found it perplexing that the advocates and opponents of intranet push quoted in this article took an all-or-nothing approach.

Those in favor of using push technologies said it helped focus on relevant information.

Those opposed said it limited access to information that can be uncovered while pulling. Why can't organizations have it both ways?

Subscribing to push channels allows employees to make sure they don't miss important new in-

formation, while organizations can be certain employees will see important announcements and news they may not voluntarily pull.

Push channels do not need to be draconian or limiting and should by no means limit employees' ability to use the Web.

Intranet managers need to employ sound organizational communications techniques to strike the right balance.

Shel Holtz
Holtz Communication
& Technology
Concord, Calif.
shel@holtz.com

STRAIGHT TALK

Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____

Title _____ Company _____ E-mail address _____

Address _____
Address Shown: Home Business New Renew Single copy price: \$3.00/issue City _____ State _____ Zip _____
*U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

1. **BUSINESS/INDUSTRY** (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other _____ (Please Specify)

2. **TITLE/FUNCTION** (Circle one)
IS/MIS/DP MANAGEMENT

19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers

41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT

11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

DEPARTMENTAL MANAGEMENT

80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
Operating Systems

- (a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products Yes No
Networking Products Yes No
Intranet Products Yes No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) Internet software
(b) Internet browsers
(c) Web authoring/development tools

5. Do you use the Internet? Yes No

COMPUTERWORLD

B4F7 X

TIMELY NEWS

Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____

Title _____ Company _____ E-mail address _____

Address _____
Address Shown: Home Business New Renew Single copy price: \$3.00/issue City _____ State _____ Zip _____
*U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

1. **BUSINESS/INDUSTRY** (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other _____ (Please Specify)

2. **TITLE/FUNCTION** (Circle one)
IS/MIS/DP MANAGEMENT

19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers

41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT

11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

DEPARTMENTAL MANAGEMENT

80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
Operating Systems

- (a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products Yes No
Networking Products Yes No
Intranet Products Yes No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) Internet software
(b) Internet browsers
(c) Web authoring/development tools

5. Do you use the Internet? Yes No

COMPUTERWORLD

B4F7 X

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



Give junk E-mail an express lane to garbage heap

Sharon Machlis

Caller ID, Day 1. I'm near giddy with power as I wait for the phone to ring — no, *dare* it to ring — as it usually does each night at dinnertime.

The first test. A landscaping company's name flashes on my ID box. Ha-ha! I don't even have to tell them, "Thanks, I'm not interested." I just let it ring.

Why can't it be that painless to screen out junk E-mail?

As it turns out, things are more complicated, even with the lowly telephone (life is like that). First problem: telemarketers often call from technologically challenged areas, where Caller ID is unavailable. Because calls from my overseas friends also show up as "unavailable," I can't safely blow off all those calls.

And although I vowed to ignore all callers who shut off their ID information, it turns out several of my privacy-conscious colleagues have blocks on their



We need technology that is stronger than simply checking headers to deal with burgeoning E-mail.

lines all the time. (Here in Massachusetts, anyone can request that their line be blocked, and it's free.)

I've ended up with a bunch of informal, internal rules, based on what calls I might be expecting that day, what time it is, and so on. And that's just for a dozen or so calls each day. Still, having some power to screen out annoying calls is better than having none at all.

So what about that burgeoning mound of E-mail?

It's time for some technology to help

us cope. And I mean something a lot stronger than simply checking "From" and "Subject" headers — the equivalent of looking at my Caller ID box. Because what works reasonably well 10 or 15

times per day can get awfully tedious after a hundred. And like much of white-collar America, I'm inundated by the Internet.

DEFENSE OPTIONS

To deal with spammers — junk-mailers who disguise their identities and then send out mass-mail sales pitches, chain letters and the like — I want smart software that verifies all return addresses to make sure they work. No operational return E-mail address? *Send to trash* before I ever see it.

I'd also like an optional infrastructure for business users so we can ensure that E-mail does indeed come from the address it says it does. This verification wouldn't be required everywhere on the Internet but could be done transparently for any user who wanted it.

For other useless mail, how about

some artificial intelligence that summarizes a message and runs it against some rules?

My Lotus Notes mail at work and my Unix mail at home will let me develop an agent, or set of rules, that looks for key words and then tosses an offending message in the trash. But if I deep-six any message that says "sex" to get rid of cyberporn, I could miss someone sending me a work-related survey asking about my gender. And if I screen out mail with "work at home" and "money" to target get-rich-quick schemes coming my way, I could miss out on some useful telecommuting information.

If a computer can play championship chess, it's about time to tell the difference between a story pitch and a pitch to earn \$1,000 per week in my spare time.

I don't need a machine that can go head-to-head with Garry Kasparov. But one that can match wits with spam merchant Cyber Promotions — now there's a system that would sell. □

Sharon Machlis is Computerworld's senior writer, security and government. Her Internet address is sharon_machlis@cw.com.

Thanks to year 2000, someone's making big bucks

Michael Cohn

By now, it's no secret: Year 2000 is big and ugly. After tackling it for several years, what we've finally come up with is: It's *really* big and *really* ugly. Folks, it's time to face the music. Some shops are making progress. Some are making excuses. But some folks out there are making money — lots of it.

Thanks to year 2000, we're all going to be working 70 hours per week — repairing, replacing, testing and complaining. But while some of us work our fingers to the bone, others will be working their way to their next Mercedes.

Someone is making a killing, thanks to year 2000. And if it isn't me, and it isn't you... who's making all the money?

THE HEADHUNTERS

As if they weren't making enough already. But with year 2000, these people will surely start pulling down six figures — every month. That's because everyone will need people. Testers. Coders. Project managers. Even \$200,000-per-year CIO positions will be up for grabs after they've been vacated by executives who a) can't take the pressure, b) don't want the blame or c) left to become headhunters.

THE DINOSAURS

At last. Those crazy Cobol guys — who were forever ridiculed, tormented and made to share cubicles — are back, and they're in demand. And not just for Cobol, but a whole bunch of lesser-known languages, such as Unibol, Generol and Tylenol. We don't make these programmers anymore; they can ask \$100 per hour. Do you know what an assembler programmer can fetch these days? Especially because statistics show that nearly half the people with three decades of assembler experience are dead... although that may not keep a headhunter from trying to wheel them to a terminal.

THE LAWYERS

You know things are really screwed up when there aren't enough lawyers. But by 2000,

suing will be the national pastime, with everyone testifying about how their system blew up, required millions to keep it from blowing up or required millions and then blew up anyway. The litigation could be in the trillions, but that's unlikely, because odds are the courts' computer systems will blow up.

YEAR 2000 PROVIDERS

Tool providers. Test providers. Offshore providers. The demand for manpower, MIPS and gigs will be the most significant market in the 20th century, next to the Beanie Baby. Of course, because everyone knows this, suddenly everyone is a year 2000 provider. Tool vendors are crawling out of the woodwork. Everyone's cashing in. "We offer same-day muffler and brake service — ask us about our year 2000 online playback testing."



Tool vendors are crawling out of the woodwork. Everyone's cashing in.

SOFTWARE VENDORS

"Year 2000 doesn't affect us. ... We're replacing everything." Until you hit 1998, when everybody's replacing everything. Software companies will be tapped out — and loving it. These people will be getting phone calls out the wazoo. They will be turning away business, sending it to smaller, less-qualified vendors that will really rake it in. So get your vendor early, before you settle for No. 14 on your list — whose slogan is, "We've been awarded dozens of implementation contracts and someday hope to finish one."

MANUFACTURERS

Folks who make automated teller machines, cash registers, time clocks. Everyday devices, some of which can't print "oo." They're going to get orders for millions of new, year 2000-compliant products. There will be back orders for digital cellular phones and two-year waits for fax machines.

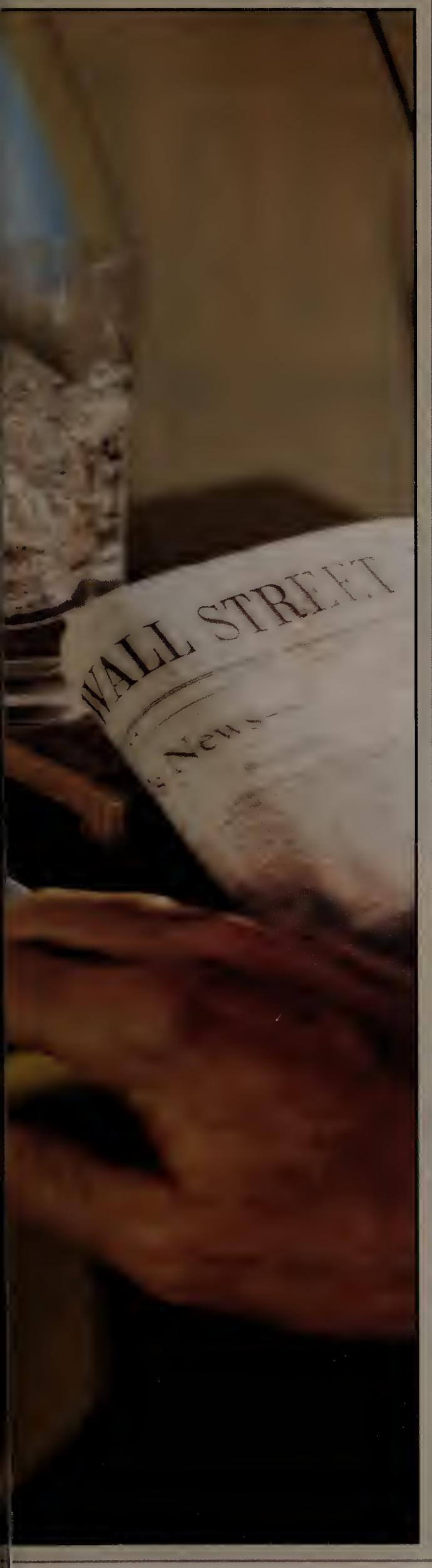
Just imagine if the post office suddenly realized it was dead in the water without 20,000 new rubber stamps? Rubber stamp makers would make a killing... if they could figure out how to mail them. □

Cohn is a computer consultant in Atlanta, and hopes to make decent money in 2000... because 1997 looks kind of sketchy.

**As the industry leader,
we have a firm belief about ultraportables.**



They should be ultra portable.



Introducing the new 3.8 lb. Portégé. Do more than ever. See more than ever.

Years ago we coined the term ultraportable to characterize the small footprint and unprecedented power of Portégé.® Since then, ever-changing business needs have made advanced technology and increased productivity essential. Equipping you to go head to head in business today, we introduce the Toshiba Portégé 300CT. Compact and light, yet uncompromising in its performance. Outfitted with a unique new panoramic screen that gives you the ability to easily view two applications side by side. And designed with a lightweight, internal magnesium frame ensuring durability and a sleeker look and feel. This is truly the ultraportable for the mobile, and upwardly mobile executive. With the new Portégé, you'll be one step closer to turning our philosophy into yours. **Always Lead.™**

PORTÉGÉ 300CT

- Panoramic 10.4" dia. active-matrix TFT color display, 1024 x 600 resolution
- 133MHz (2.5v) Pentium® processor with MMX™ technology, 256KB L2 cache
- 1.6 billion byte (= 1.51GB) HDD
- 32MB high-speed EDO DRAM (expandable to 64MB)
- PCI system-bus architecture
- HiVideo™ PCI graphics controller with 2MB video memory (4Mbit EDO RAM)
- MPEG playback through either software or optional ZV Card
- 16-bit MIDI, WAV and Sound Blaster® Pro compatible with speaker and microphone
- Supports two Type II or one Type III 16-bit PC Cards, ZV Cards or 32-bit CardBus Cards
- Universal Serial Bus (USB) port
- Port Expander
- Built-in 33.6Kbps, V34 voice/data/fax modem
- Fast Infrared (FIR) IrDA compliant ports
- Lithium Ion battery
- Accupoint™ pointing device
- 3.8 lbs.
- Optional Multimedia Port Replicator
- Windows® 95
- 3-year limited warranty
- Toll-free technical support - 7 days a week, 24 hours a day

For more information, visit <http://computers.toshiba.com>, or call 1-800-457-7777.



3.8 LBS.

Built with an internal magnesium frame, it's not only lighter in weight and sleeker looking, but uncompromising in its durability.



PANORAMIC SCREEN

Allows 20% more workspace area and by its very nature, increases your productivity.

View two Web sites at once on the new panoramic screen with 1024 x 600 resolution.



MMX™ TECHNOLOGY

Maximize your multimedia applications by 10-20% using the Pentium® processor with MMX™ technology.



EXPANDABILITY

The new Multimedia Port Replicator gives you 10X* CD-ROM, two stereo speakers and instant connection to your desktop environment.

In Touch with Tomorrow
TOSHIBA

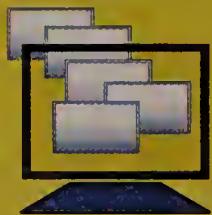
BUSINESS
PROBLEM

How to put all your business reporting on-line without lengthy deployment or extensive retraining

SOLUTION

REVEAL SECURE INTRANET REPORT DISTRIBUTION AND WAREHOUSING

- Finance and Accounting
- Sales and Service
- Human Resources and Administration
- Engineering and Production



REVEAL™



Fast, flexible, secure network access to time-critical and historical information. All without modifying your existing computer reporting systems.

REVEAL automatically captures your mainframe, SAP, ORACLE, or other reports and makes them accessible from Windows™ PCs, browsers and groupware. On-line report cataloging, indexing, searching, viewing, archiving and notification of report availability, with precise page-level security control. Remote access, report mining and export to spreadsheets, e-mail, and other applications.

Eliminate fiche and paper archiving.

BUSINESS REPORT-MANAGEMENT SOLUTIONS FOR:

- Enhanced Business Performance
- PinPoint™ Information Security
- Rapid Return on Investment

Complete support with turnkey installation, integration, training, and 24 hour maintenance.



Business
Alliance
Programme™

O'PIN SYSTEMS

(800) 888-1804 <http://www.opin.com>

FROM THE EDITORS OF

COMPUTERWORLD

VOLUME 2, NUMBER 5

JUNE 23, 1997

Intranets

A MONTHLY LOOK AT WEB DEVELOPMENTS BEHIND THE FIREWALL

LINKING BUSINESS PARTNERS

Inside Extranets

Hooking up with your suppliers and distributors is easier said than done. Cultural, business, network and data access issues must be conquered before partners can work as one. By Thomas Hoffman

They're the latest in business-to-business connections. They can cost less than \$50,000 or up to \$50 million to create. And no matter what vendors tell you, they're tough to build.

"Extranets" — that is, giving outsiders access to your internal information via Internet technologies — require more than simply tying together legacy systems with Internet Protocol addresses. Many companies that try to build extranets "fail to look at the value proposition and its impact on busi-

ness processes" before they break ground, says Carl Lehmann, director of electronic commerce research at Meta Group, Inc. in Stamford, Conn. And those that do still face familiar security concerns (see story page 9) and the complications of getting all parties on the same technological page. Not to mention the potential ire of partners that may not realize the same benefits.

Still, savvy organizations that are seeking cheaper, more efficient ways to connect with their suppliers and business partners believe extranets are worth the time and effort. For some companies, particularly those in fiercely competitive industries such as healthcare,



LINKING BUSINESS PARTNERS

Continued from page 1

extranets are a means of survival. (Such is the case for medical supplier Monitor Medical, Inc. See story page 6.)

Extranets can also go a long way toward streamlining age-old business connections throughout the supply chain. Simple extranets, such as those that offer browser-based access to a manufacturer's inventory and price

salespeople handle it over the phone, says Cameron Johnson, manager of customer information services at the El Segundo, Calif., company.

Nevertheless, most Fortune 1,000 companies that are looking to create competitive advantage through their extranet connections should expect to invest significant amounts of time, money and people to research and build these gate-

Since early 1996, LSI has been working with 12 of its top 100 customers over the extranet. "The time to market is part of what's driving this," says Crawford, whose company designed the chip that's used in the Sony PlayStation, a 32-bit game machine from Sony Computer Entertainment America, Inc. that hit the market in time for Christmas '94, six weeks before its competitors. "If we can get chip design time shorter and shorter, it gives our customers competitive advantage."

It also keeps LSI's customers coming back for more. Crawford estimates that the \$3 million LSI has invested in Unix and Microsoft Corp. Windows NT hardware and software to support its firewall and extranet paid for itself within 18 months through additional orders. LSI's competitors include resource-rich Motorola, Inc. and Intel Corp., so LSI has to work smarter to compete. As Crawford says, "If we want to play with the big boys, we have to have the same tools or better."

Yet even that doesn't guarantee success. It takes two or more organizations to make an extranet, and if LSI's customers have sloppy network addressing schemes, network translations can be a problem. "Sometimes you get into 'It's not my network problem, it's your network problem' types of arguments, and those can take months to resolve," Crawford says. That was the case with one of LSI's top subcontractors, which does a lot of engineering work.

Yet if LSI is a trailblazer, it certainly doesn't have the road to itself. Many of the companies employing extranet strategies are also in high tech or other industries marked by fierce competition and shrinking margins. These include industrial equipment manufacturers — electronics and electrical parts makers — and healthcare organizations, as well as the food and beverage industry, which feeds off 1% margins in the grocery business.

"If they can save a penny [per trans-



LSI LOGIC'S Nicole Crawford estimates that the \$3M her company invested in Unix and NT hardware and software to support its firewall and extranet paid for itself within 18 months through additional orders

list, can cost as little as \$50,000 to build. More elaborate extranets that include search and discovery mechanisms, which could be used to locate a manufacturer's parts and price information over the World Wide Web, can cost tens of millions of dollars to implement.

But the payoffs can be more than worthwhile. PC wholesaler Merisel, Inc. has found that it's 70% cheaper to process a customer order through its extranet than to have one of its tele-

ways, according to the pioneers that have blazed the first electronic trails.

CHIP-PING IN

Nicole Crawford began building her company's extranet two years ago, "before I even heard of the word 'extranet.' " Crawford, global security manager at LSI Logic Corp., said the Milpitas, Calif.-based chip designer was looking for an efficient way to transmit design information among itself, its subcontractors and its customers.



Tips On Building an Extranet

MEET WITH KEY MANAGERS in different business units to plot what you're trying to accomplish.

HOLD FORUMS WITH KEY suppliers or customers who will be using the system to find out what kind of information they're expecting to access. That will help nip political and security issues in the bud.

MAKE SURE TO REFRESH Web pages regularly (every week or two) to keep information timely for visitors.

DON'T UNDERESTIMATE the costs for training and security. In addition to needing firewalls, you'll likely have to invest in security for legacy systems that customers will "touch." And because turnover is a constant at supplier and customer companies, training and retraining will be an ongoing exercise.

action], that can go straight to their bottom lines," says Liz Sara, vice president of marketing at SpaceWorks, Inc., a Rockville, Md.-based vendor of business-oriented electronic commerce applications.

SHEDDING LIGHT

Some companies have a lot more than an Abe Lincoln to gain.

General Electric Co.'s GE Lighting division saw extranets as a more effective way to streamline order entry and the bid process with the companies that supply the parts for its machinery. The machines that make GE's lighting are made up of hundreds of parts, such as rods and gears, and GE Lighting spends up to \$15 million a year on them, according to Ron Stettler, manager of global sourcing systems. It often took up to 21 days to get a part, he notes.

"It was a very labor-intensive process," Stettler says. "Putting out a couple hundred of those orders each day was quite an ordeal."

The company's first attempt at shortening its cycle times through an electronic bidding system built by sister company GE Information Services in January 1996 flickered out after just five months. Suppliers would often wait until the eleventh hour before posting their bids against the lowest bids that had been made. Further, it cost them a lot to use: Suppliers involved in hundreds of thousands of transactions annually were paying thousands of dollars just to bid on contracts, Stettler says.

The electronic marketplace was replaced in September with GEIS' Trading Process Network (TPN), an Internet-based electronic commerce system that's expected to generate \$1 billion in contract opportunities for all of GE's worldwide suppliers this year. Stettler's piece, called TPN Post, required GEIS to connect GE Lighting's IBM mainframe-based purchasing system to the extranet. Now when suppliers seek infor-

mation with their browsers, purchasing data is downloaded from the mainframe to a Hewlett-Packard Co. Unix server, then distributed onto an Oracle Corp. database and uploaded onto a Novell, Inc. file server.

On the user end, GEIS first worked with a cross section of suppliers on workflow and technical issues, then held focus groups. For those suppliers that bought new PCs to support TPN Post, GEIS helped them configure Windows. It assisted others with posting purchasing information electronically and pulling that data into their costing systems.

GE Lighting also held a four-hour training session for 55 suppliers last summer. "We had suppliers come in with button-down suits to Harley Davidson T-shirts, and they did just fine," Stettler says.

Not everyone is as happy as GE with the system, however.

One supplier said TPN Post has actually created more work for him. The extranet "really isn't an asset to us at all," says Bob Reiman, an account executive at Astro Model Development Corp., an Eastlake, Ohio-based machine shop.

Reiman says it's more time-consuming for him to pull a GE Lighting engineering drawing off the extranet, print it, analyze it and reply with a quote than it was to quote a job the old way. That's partly because his organization doesn't have a plotter printer, so he has a hard time scrutinizing large drawings that are shrunk down to 8.5 by 11 inches.

It recently took Reiman three hours to extract, analyze and respond to 13 drawings from GE Lighting's extranet — an hour longer than it used to take him via fax. "It's saving GE money, but it's causing us more work," Reiman says.

As GE demonstrates, bringing busi-
Continued on page 4

WHAT'S ONLINE

For an even more comprehensive look at intranets, visit our online presence at www.computerworld.com/intranets

LINKING BUSINESS PARTNERS

Continued from page 3

ness partners online can take considerable effort. That's partly because many companies make the mistake of equating electronic data interchange (EDI) with electronic commerce. Whereas EDI is a set of standards used between companies and their customers or suppliers to facilitate business-to-business transactions, uniform technologies are by no means guaranteed in electronic commerce, which often extends beyond ordering and fulfillment processes. In addition, with a company's mission-critical databases a needed part of almost any extranet, access privileges and security become mammoth concerns.

IN MOST RESPECTS, extranets are at the same development stage that intranets were at this time a year ago, according to Ted Julian, an analyst at market research firm International Data Corp. based in Framingham, Mass.

But when those hurdles can be surpassed, EC offers added benefits. These include a "satisfaction component" of creating electronic bonds between suppliers and business partners rather than forcing EDI standards on them, Meta Group's Lehmann says. And that means it has more value.

Snap-On Tools Co. was out to create such an "electronic village" when it began rolling out an extranet to its 3,000+ U.S. dealers last year. The Kenosha, Wis.-based automotive tools distributor saw extranets as more than just a way of eliminating paperwork and shipping costs with its dealers. Snap-On's extranet "gave us an ability to be a single voice to the entire dealer channel," says Bob Gingras, Snap-On's manager of electronic commerce.

Like pioneers on the public Web, Gingras quickly learned that Snap-On

had to keep its extranet site fresh to keep people coming back to it. "We've had to change the content constantly," says Gingras, who placed Snap-On's extranet hardware and software costs at less than \$100,000, including setups for dealers that didn't already have browser software and Internet access. "Pilot users were giving us an 'A' for effort, but they wanted more of a newsgroup format and categorized chat rooms." Snap-On added those for the general rollout.

The digital community aspect can't be underplayed, says Mike Cummins, vice president of information systems at VHA, a national healthcare alliance in Irving, Texas. IBM is building it an extranet to electronically link community hospitals with health maintenance organizations and other healthcare players. "The long-run value for us in building an extranet is bringing these [organizations] into a [digital] community," Cummins notes.

HEALTHY RETURNS

Elsewhere in healthcare, cost savings play a huge role in some organizations' interest in extranets, as the industry grapples with the financial pressures of consolidation and managed care. That's the case at Claimsnet.com, an administrative services provider in the healthcare field that has shifted its "entire business model onto the Internet" since March following a two-year, \$2.5 million investment, according to Bo W. Lycke, chairman and president of the Dallas-based outfit.

Claimsnet.com always operated online. Customers would use their modems to transfer claims information electronically to insurance "gateways" such as National Data Corp. But administrative services such as reimbursement management and claims processing required a lot of on-

Continued on page 9



A Sampling of Vendors

INFORMATION DIMENSIONS, INC.

Dublin, Ohio
(614) 761-8083
www.idi.oclc.org
Creates Web-enabled document management software.

PFN, INC.

Cambridge, Mass.
(617) 494-9980
www.pfn.com
Provides extranet software and services.

PROGRESS SOFTWARE CORP.

Bedford, Mass.
(800) 477-6473
www.progress.com
Markets and supports extranet application development tools.

SPACEWORKS, INC.

Rockville, Md.
(301) 251-4136
www.spaceworks.com
Develops electronic commerce software.

SUN MICROSYSTEMS, INC.

Mountain View, Calif.
(800) 821-4643
www.sun.com
Provides hardware, software (including firewall) and extranet services.

C I O F I N D S C U R E.

OLD CLIENT/SERVER ARCHITECTURE
FAILS TO DELIVER ON INTRANET PROMISE.

LIVELINK INTRANET
PRESCRIBED* AS
"ECONOMIC AND OPERATIONAL IMPERATIVE."

*Source: Ed Vaccaro, CIO, Booz, Allen & Hamilton

TAKE ME TO
YOUR LEADER**

www.opentext.com

1-800-507-5777

**ACCORDING TO IDC (INTERNATIONAL DATA CORPORATION),
LIVELINK INTRANET LEADS WITH 64% SHARE OF THE MARKET
FOR DOCUMENT MANAGEMENT APPLICATIONS THAT USE THE WEB BROWSER
AS A FULLY FUNCTIONAL CLIENT.

LIVELINK INTRANET.



IN BOX



LIBRARY



MY STUFF



PROJECTS



SEARCH



STATUS



WORKFLOW

FOR THE HYPERLINKED ORGANIZATION.TM

LINKING BUSINESS PARTNERS

Medical Supplier Takes Holistic Approach

With cost pressures driving managed healthcare, more hospitals and clinics are finding it cheaper and easier to cut single mega-purchase orders for syringes and ventilators with medical equipment giants such as Baxter International, Inc. That means smaller players such as Monitor Medical, Inc. need every edge they can get.

Monitor's year-old extranet may provide that advantage by enabling customers to check inventories online, helping sales reps respond more quickly to activity in their accounts and maybe one day resulting in a national distribution network of other small suppliers.

"We're never going to be a Sears, Roebuck or a Baxter, so we have to be

"WE HAVE TO BE perceived as a progressive, technically savvy organization."

— GEORGE HOMME

perceived as a progressive, technically savvy organization," says George Homme, a senior consultant at Electronic Solutions, Inc., the IT arm of \$20 million Winston-Salem, N.C.-based Monitor Medical.

If he's successful at establishing a network of local distributors using the Internet, Homme hopes a big hospital chain such as Columbia/HCA Healthcare Corp. might place bulk orders with that group rather than with a bigger company such as Baxter. (Ironically, a company Baxter acquired in the 1980s pioneered the extranet concept — sans Internet technology, of course. American Hospital Supply Corp. was among the first to give customers the ability to place and track orders via a private SNA network.)

Monitor Medical's extranet also lets customers check inventory and order products. About 20% of Monitor

Medical's customers are ordering supplies online today, representing about 8% of the company's total revenue stream. Homme expects online revenue to grow exponentially once other customers find out how the extranet can streamline the ordering process and reduce their costs.

But not all customers are embracing the concept. One healthcare provider notes that companies aren't likely to cast aside long-standing relationships with vendors and distributors just because one suppli-

er has made its wares accessible over the Internet. At New England Medical Center in Boston, "There's politics, relationships built up with local vendors" that the hospital feels bound to maintain, explains William Howard, director of respiratory therapy. "If Monitor Medical was one of my preferred vendors, then it would be a different story," he adds.

Still, Howard says Monitor Medical's extranet is a terrific way to check inventories for specific products, and his group has used the system to order a small amount of computer hardware and software for his department. But shipping costs — it's cheaper for New England Medical to order medical supplies from a local distributor than from a distributor in North Carolina, Howard says — have also kept it from using the extranet more.

Payoffs for Monitor Medical so far include increased sales (though the figure of a 60% increase this year isn't attributable only to online sales), the ability to service that growth without increasing staff and a drop of 10% in phone bills, says Doug Constable, Monitor Medical's vice president of operations.

The system cost more than expected because the Web development tool, Progress Software Corp.'s WebSpeed, cost \$20,000 more than Monitor Medical anticipated. But the tool probably saved the company \$10,000 in programmer hours, Homme says.

The interactive order-entry system took less than six weeks to get up and running, Homme said. Security includes passwords and a system whereby information is E-mailed to the user's electronic-mail address.

— THOMAS HOFFMAN



► Visual Java Development

Build Rome in a day. It's easy with Symantec Visual Café™ for Java™.



► Visual Café for Windows® and Macintosh®



Develop faster. Compile faster. Debug faster. Realize your Java™ dreams faster.

Symantec, the creator of the first full-featured Java development environment now unleashes the first Rapid Application Development environment for Java developers:

Symantec Visual Café™

Visual Café comes complete with an extensible component library with all of the building blocks you need for your application.

Simply drag and drop a component onto a form. Our Interaction Wizard lets you visually specify all the actions and events. And then Visual Café automatically generates the Java code for you.

Thanks to our exclusive two-way programming you can add or modify the code at the source level, too.

So you'll be whipping out those application prototypes at speeds you can only dream of now.

Imagine building all of your forms visually. Or building your entire user interface without writing one single line of code!

As an added bonus, Symantec's Just In Time (JIT) compiler (included in Netscape's new Navigator™) runs your Java applications faster than any other browser or Java virtual machine on the planet.

So get your hands on the hottest new development tool for Java right away.

For more information, please call us at 1-800-453-1059 ext. 9B68 or visit our Web site at cafe.symantec.com.



SYMANTEC.®

The one truly open email and groupware solution

has been staring you in the face for over two years.

© 1995 Netscape Communications Corporation, Inc. Netscape and the Netscape logo are registered trademarks of Netscape Communications Corporation.

Introducing Netscape Communicator and SuiteSpot.

The browser was only the beginning.

At some point you'll launch Netscape®, you'll exchange emails with people inside and outside your company and, all of a sudden, it will hit you. The enterprise email and groupware solution you've been looking for is closer than you think.

Netscape Communicator and SuiteSpot™ is the world's only fully native open solution for email and groupware. And, because it's built from the ground up on the Internet messaging standards that Netscape helped create, you can now extend your intranet beyond the traditional boundaries that restrict existing proprietary solutions.

To come face to face with the future of communication and collaboration look over *The Networked Enterprise: Netscape Enterprise Vision and Product Roadmap* by Marc Andreessen. Just call 415-937-2555 or visit http://home.netscape.com/misc/portal_enterprise.html



NETSCAPE



LINKING BUSINESS PARTNERS

Security Takes on New Meaning With Extranets

Users encounter issues from political battles to sensitive information to cost

The familiar Internet issue of security takes on a whole new dimension with extranets, as users must deal with the political wranglings and sensitivity of their electronic business partners, not to mention the added costs of protecting internal systems from unwanted visitors.

Here are some problems users have encountered and the way they are resolving them:

PROBLEM: LSI Logic's customers wanted access to all of the chip designer's internal systems because that approach would be more efficient for them. But in the competitive microprocessor field, that raised the risk of cross-pollination of competitive information.

RESOLUTION: LSI modified the

applications that each customer was allowed to access. Customers have been given passwords and identification codes to access specific applications.

LSI built a firewall "complex" that relies on several layers of security, including packet filters and an encryption algorithm built by Sun Microsystems, Inc. called simple key management of IP, or SKIP. LSI's firewall has also been modified to recognize each visitor's IP address and determine who has access to which files.

Those modifications aren't cheap. To ensure that its clients accessed only engineering information relative to their chip projects, LSI had to partition an engineering design tracking application, bring it inside its firewalls and add a server to support it. Labor and equipment came to \$150,000, says Nicole Crawford, global security manager at LSI. "Oh, yeah, those types of costs are never going to stop," she added.

PROBLEM: Securing a data warehouse accessible to MasterCard International, Inc.'s 23,000 member

banks over an extranet.

RESOLUTION: MasterCard uses Bedford, Mass.-based Secure Dynamics, Inc.'s SecurID technology. It gives users a small device with a small digital display with six digits that change every two minutes. When users log on to the system, they use the passcode that appears on the card.

SecurID "adds a layer of protection" to MasterCard Online, says Sam Alkhafaf, senior vice president of technology and strategic architecture at MasterCard in St. Louis.

PROBLEM: Reassuring anxious users that a site is secure.

RESOLUTION: Merisel, an El Segundo, Calif.-based PC wholesaler, has infused its site with four levels of passwords that visitors must input to visit the site. That hasn't reassured everyone, however.

Some of Merisel's loyal customers still won't go near it, "afraid that the information that's passing through isn't secured," says Cameron Johnson, manager of customer information services at Merisel.

— THOMAS HOFFMAN

Continued from page 4

site meetings, software installations and training for customers. After a while, it got too expensive for Claimsnet.com to continue installing PCs, modems and software at each client site, says Terry Lee, an executive vice president. And customers didn't get off easy either: Software cost \$500 to \$2,000 to install, three days of training cost \$2,000, and then there was a monthly subscription fee of \$200, Lee says.

But the Internet changes all that.

Doctors and dentists who want to use the service simply use standard Web browsers to visit the site to gather outpatient claims information for free. (To help protect sensitive patient data, Claimsnet.com created individual extranet sites for each of its doctors and dentists. "It's kind of a padded-cell environment for our customers," Lee explains.) Claimsnet.com collects the claims processing fees from health-care insurers.

Whatever a company's goal — cost savings, increased sales, better busi-

ness relationships, efficiencies that enable all three — an extranet may be the way to achieve it. In fact, if history tends to repeat itself, that may prove more true than not. Extranets are in the same developmental stage that intranets were a year ago, according to International Data Corp. analyst Ted Julian. That may mean that a year from now, adoption will be considerably more widespread.

Hoffman is a Computerworld senior news editor, IS management.



PROJECT: SILVERPLATTER INFORMATION, INC.

Database Firm Hands Distributors Wired Access

By Steve Alexander

SilverPlatter Information, Inc. in Norwood, Mass., is a database firm that provides information to universities, hospitals and libraries, mostly on CD-ROM or magnetic tape. Its extranet, the Partner Information Center, provides up-to-date account information to distributors that sell subscriptions to SilverPlatter's bibliographic databases, which contain descriptions of articles on topics from agriculture to health science. Some distributors can also place

their orders via the extranet.

About half of SilverPlatter's 200 distributors have access to the extranet, and about 50 are regular users. Those not using it do business via faxes and phone calls. Tina Majanlahti, electronic reference library project manager at Canadian distributor IHS/Micromedia in Toronto, says the extranet helps her firm provide timely account information to customers. "It means that communication comes to the customers from our company, even though it originally came from SilverPlatter. That enables us to better reinforce our position as the customer contact," Majanlahti says.

Tom Bergman, SilverPlatter's senior developer, explains the extranet project:

WHAT DISTRIBUTORS CAN ACCESS

Detailed information on orders, customers, financial information and product shipments. Reports are generated on the fly. Distributors will soon, if they can't already, be able to place renewals and new orders through the extranet.

WHAT THEY CAN'T ACCESS

Information on competitors' orders. Providing safeguards to control what distributors can see was the biggest challenge. SilverPlatter created database tables that allow distributors to quickly search only their own customer set based on a customer number, a customer name, a distributor ID number and an "integer field" that counts how many valid orders the distributor has with that customer. The integer field is updated each time customer orders are added or changed; when it reaches zero, that customer's record becomes unavailable to that distributor.

COST AND ROI

The cost was about \$36,000 (\$25,000 to develop the application, \$6,000 to license the development tool and \$5,000 for a server). No return on investment analysis has been done because the expenditure was considered small and fulfilled an obvious need. The company already had a T1 connection to the Internet and a customer database.

STAFFING

The extranet has not changed the level of staffing at the 250-employee company, but it has allowed people who spent time providing information to distributors by

phone or printout to be reassigned to more productive work.

TOOLS

Progress Software's WebSpeed is the development tool SilverPlatter used to generate the HTML pages. The WebSpeed product consists of an interface between the company's Web server and a pool of Progress Software intermediaries that look like clients; these take Web requests and obtain information from the Progress database. As a result, there were no compatibility issues, and the setup was relatively easy.

SECURITY

SilverPlatter authenticates users by checking IP addresses, passwords and user IDs. Before fulfilling a Web information request, the software compares the requester's ID information with a table of ID information in the database.

DISTRIBUTOR REACTION

Most like it. Some have employees who would rather call than use the extranet, but this problem is diminishing as SilverPlatter urges distributors to provide Internet access to their employees who deal with SilverPlatter.

For now the company won't turn away distributors that prefer the old fax and phone method of doing business, but in the long run the difficulty of dealing with such distributors could affect that decision.

Alexander is a freelance writer in Edina, Minn.



**SilverPlatter's Tom Bergman:
Extranet saves time and money
and serves distributors better**

COMPUTERWORLD INTRANETS is published monthly on the fourth Monday of the month as a supplement to Computerworld. Editor: Anne McCrory; Designer: Stephanie Faucher; Assistant Managing Editor: Kimberlee A. Smith; Computerworld Magazines Editor: Alan Alper. Phone: (800) 343-6474; E-mail: anne_mccrory@cw.com; fax: (508) 875-8931.

Back

Forward

Home

Edit

Reload

Images

Open

Print

Find

Stop



92% OF THE FORTUNE 100 USE

NETSCAPE INTRANET AND INTERNET SOLUTIONS

TO LEARN
MORE ABOUT
SUITESPOT, CALL
FOR YOUR FREE
WHITE PAPER,
"THE NETSCAPE
INTRANET
VISION."
1-800-397-8607

Why is Netscape software the Internet/intranet software of choice for so many Fortune 100 companies? One reason is our single-minded focus on Internet technology and how it can improve business communications.

Take our new intranet solution, SuiteSpot. It contains the functionality of older systems like Lotus Notes and Microsoft BackOffice, but offers greater productivity and flexibility. Only with SuiteSpot can you

communicate, collaborate, and share information across any platform or operating system, whether inside your company or out. SuiteSpot also costs less than Notes or BackOffice. And SuiteSpot easily integrates with current client/server applications running on Unix and Windows NT.

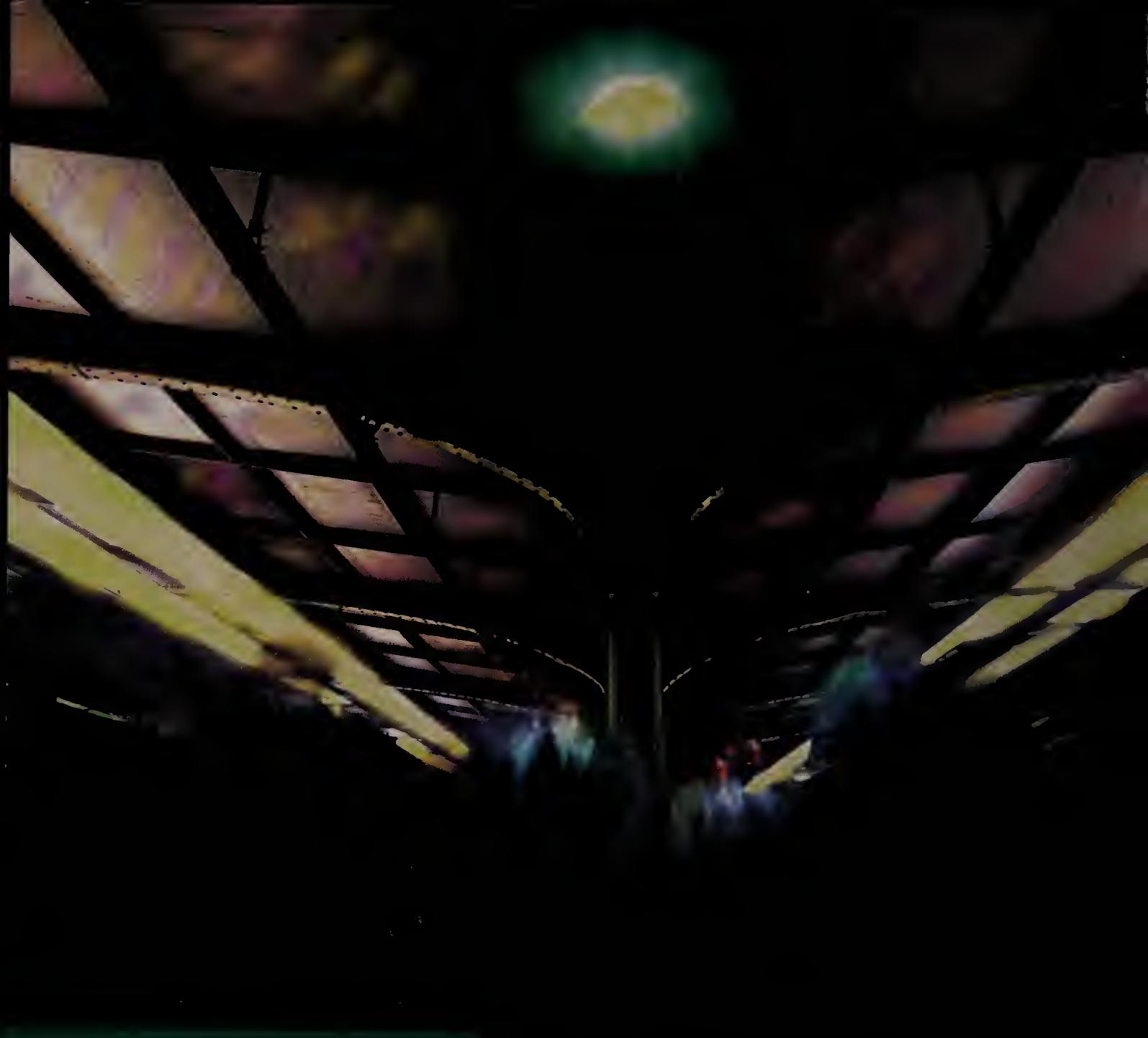
SuiteSpot is just one example of how Netscape is providing open Internet technology to better link people and information. To see how we can help your

company improve its internal communications, call us toll free at 1-800-397-8607. Or visit our Internet Web site at <http://info.netscape.com/pre4>



NETSCAPE





THE HP DOMAIN
INTERNET EXPRESS.
NOW BOARDING ON
BOTH PLATFORMS.

Here comes the HP Domain Internet Server family. Easy to use and Internet-ready...with unmatched publishing, navigation, collaboration, and transaction capabilities. On both UNIX and NT platforms, it provides the most scalable, manageable, secure Intranet and Internet solutions going. All backed by our expert Net consulting, education, and support. Check out the engines that are driving business into the future. Visit www.hp.com/go/domain.

© 1997 Hewlett-Packard Company



COMMENTARY

Recycling the surplus

DAVID MOSCHELLA

LIKE THE ARAB oil states in the late 1970s, Microsoft now has more money than it knows what to do with. Its cash balance has reached \$9 billion and is still rising rapidly. It's starting to get embarrassing.

Because there is only so much the company can reinvest in its current software products, Microsoft's entry into nonsoftware IT markets was inevitable. Indeed, it would be sad if Bill Gates felt that Microsoft's great wealth was best spent on huge dividends or non-IT ventures such as hotels or golf courses.

Over the past few years, Microsoft has broken new ground with The Microsoft Network, MSNBC, WebTV and most recently, the \$1 billion investment in Comcast, the nation's fourth-largest cable television provider. Then there's Bill Gates' personal investments in Teledesic, Corbis and other areas. Clearly, Microsoft is no longer just about "micros" or even "software." Its name is becoming an anachronism in much the same way that International Business Machines and National Cash Register have become. Perhaps someday a simple "MS" will do.

PARALLELS WITH IBM

There are, of course, more tangible parallels with IBM. At the peak of its power from 1978 to 1984, IBM also was awash with cash. It created Satellite Business Systems, acquired Rolm, bought stakes in MCI and a then-weak Intel, established the IBM Information Network and the IBM Credit Corp., and generously sprinkled money across various pro-IBM independent software vendors.

Although the industry watched in awe, the results proved modest. Monopoly power in one segment didn't assure success in largely unrelated areas. Neither did unlimited amounts of cash. History suggests that if Microsoft is to dominate nonsoftware portions of the IT industry, it will have to earn it segment by segment, against formidable competition such as AT&T, Time Warner, Viacom and others.

This new competition will likely benefit us all. No matter how self-serving it seems, much of what Microsoft and, for that matter, Intel, are doing is designed to move the IT industry forward. Today's Wintel investments extend our industry's frontiers in areas such as communications bandwidth, interactive content, digital broadcasting and PC/TV integration. These are risky and expensive endeavors that require committed leadership.

In the 18th century, political philosophers used the phrase "enlightened despot" to refer to monarchs who, although possessing absolute power, tried to use it

in a benevolent way that would move society forward. Bill Gates is perhaps anything but benevolent, but when it comes

to the potential of digital technology, few are as enlightened, romantic or committed. His bets won't be frivolous.

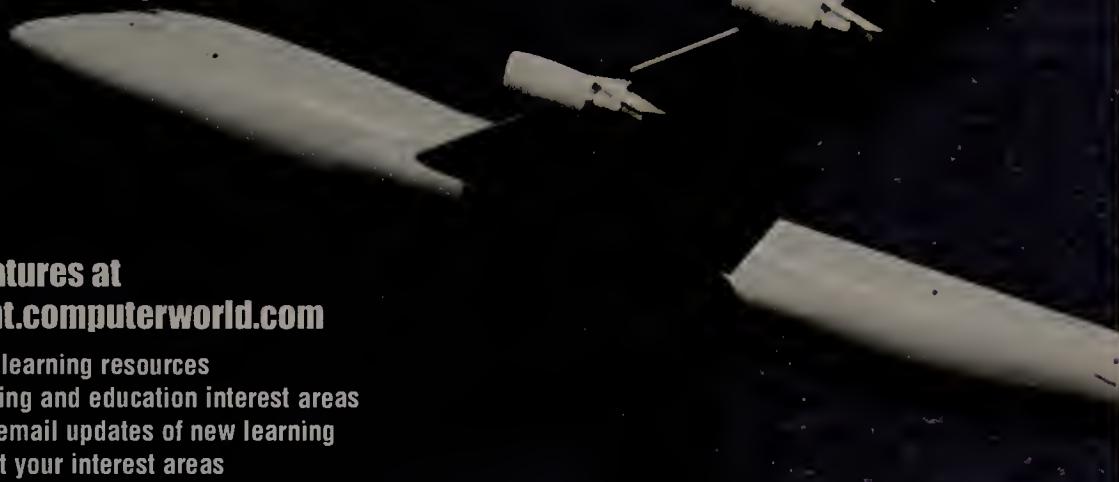
But will they pay off? In the end, both the Arab windfall and IBM's accumulated might pass quickly. Their riches wound up being recycled in ways that benefited others as



much as themselves. As I will argue in future columns, although Microsoft's software power will almost certainly become even more frightening, its impact in telecommunications, broadcasting, content and network services will likely remain modest. The surplus needs to be absorbed somewhere. □

Make your I.T. skills & training take off with this FREE tool

<http://careeragent.computerworld.com>



Use these FREE features at <http://careeragent.computerworld.com>

- Search for specific learning resources
- Describe your training and education interest areas
- Optionally receive email updates of new learning resources that meet your interest areas
- Describe your current or ideal I.T. position
- Assess your skills relative to the skills required for that position
- Calculate a personalized "skills gap" to compare your fit to that position
- Record work experience for use in skills assessment
- Define goals for later use in career planning

And if you're an I.T. manager concerned about staff retention, you'll want to check out the "about CareerAgent" button also at <http://careeragent.computerworld.com>. Here you'll see how a corporate subscription to CareerAgent will help your entire staff assess learning styles and skills, calculate skill gaps, and search for training. As a manager, you can use CareerAgent's intelligent decision support system to calculate individual, group and department skill gaps.

The point? Every individual on your team has an idea of their career plan, and knitting these plans together can benefit corporate goals. Think about your current team today. Do individual career plans in your organization seamlessly benefit from available projects? Training resources? Corporate goals? Is this information connected to cost-effectively reskill and retain staff? It's all possible with CareerAgent, where management and staff can collaborate to continuously develop a career "itinerary" for each individual. On the Internet or your intranet. Your choice.

For details, see <http://careeragent.computerworld.com> or call 1-800-343-6474, x6000 today. And make every career on your team what it should be: a well-planned journey of enrichment.

Search Thousands of Course Listings From:

Learning Tree International
Wave Technologies
Hewlett-Packard Educational Services
Boston University Corporate Education Center
Interpersonal Technology Group
DPEC
Business Communication Review
American Research Group (ARG)
IKON
HOTT (Hands-on Technology Transfer)
NIIT, Incorporated
The Center for Systems Management
New Horizons Computer Learning Center of Boston
Sybase/Powersoft Education
ESI International
The Seale Group, Inc.
Strategic Management Group, Inc.
CBT Systems
Televerde
Classic System Solutions, Inc.
And more coming soon...

CAREER AGENT
careeragent.computerworld.com

CareerAgent is a trademark of ComputerWorld, Inc. © 1997 ComputerWorld, Inc. All rights reserved. Data may be subject to change.

New From:
COMPUTERWORLD

A B C D E F
G H I J K

L M

Sometimes the
quickest way
from A to Z
is to start
in the middle.

N O

P Q R S T U
V W X Y Z



Magstar MP, with its unique midpoint loading and exceptional reliability, retrieves most data up to three times faster than comparable systems.

The Magstar™ MP storage system starts in the middle of the tape, instead of the beginning, so you can retrieve most data up to three times faster than comparable tape storage systems.* (Such a simple idea, our competitors wonder why they didn't think of it first.) Which means tape isn't just for backup

anymore. With Magstar MP's remarkable three-year warranty, and prices starting as low as \$8,500, you can confidently use tape for all your storage needs. Contact your IBM representative or IBM Business Partner, or visit www.storage.ibm.com for more information and a copy of our warranty.

Solutions for a small planet™

IBM
Solutions for a small planet™

Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

Bank taps EDS

The First National Bank of South Africa has inked a 10-year, \$325 million check processing and data services contract with Electronic Data Systems Corp. in Plano, Texas. The bank will transfer 550 employees to EDS as part of the contract.

Internet travel service

American Express Co. and Microsoft Corp. are displaying early versions of "Project Rome," a new Internet-based service for booking business travel over the Internet. The service was designed to save companies time and money by automating the process of booking trips — building in rules to ensure better compliance with company policies and contracts than if executives booked their own travel at their own discretion.

Consultants merge

Technology Solutions Co. (TSC) in Chicago has announced plans to acquire The Bentley Group, a Boston-based information technology consulting firm that offers customer relationship management services to Fortune 500 firms. Under the terms of the agreement, TSC will acquire the operations of The Bentley Group through a stock, stock option and cash transaction valued at \$19 million.

Shell sells software

Simulation Sciences, Inc., a petroleum industry software developer in Brea, Calif., has announced plans to acquire Shell Oil Co.'s business planning and process-control software for \$1.5 million.

Bakery outsources

Stroehmann Bakeries, Inc. in Horsham, Pa., has outsourced its data processing services to Systems Management Specialists (SMS) in Santa Ana, Calif. Under the three-year, \$1.8 million agreement, Stroehmann's information technology and data processing operations will be managed at SMS' data center in Princeton, N.J.

Kentucky beefs up network

► State's education department chooses Windows NT Server

By Laura DiDio

WITH 1,400 schools, 650,000 students and 50,000 teachers and administrators, the Kentucky Department of Education is big business.

And like any big business, the department needed to implement a cost-effective, long-term network strategy to deliver applications and provide access to the Internet faster, cheaper and easier.

The new network setup will be the equalizer in education, giving students in even the poorest Appalachian school dis-

tricts access to the same information as their peers in richer districts such as Lexington and Louisville. That will allow students to be in a better position to compete for scholarships and jobs after they graduate, said David Couch, the department's director of the Office of Education Technology in Frankfort.

The Kentucky Department of Education is replacing much — though not all — of its existing Novell, Inc. NetWare 3.12 networks with Microsoft Corp.'s Windows NT Server and upgrading from Microsoft Mail 3.5 to the latest version of Microsoft Exchange.

The new network setup will be the equalizer in education.

Usage of Microsoft Mail was doubling every month, and the traffic was straining the bandwidth limits of existing 56K bit/sec. and T1 lines.

"And that's with only half of our 700,000 users and 1,400 schools networked. So we knew we needed to do something within the year," Couch said. Upgrading to Exchange 4.0 alleviates the bandwidth problem and increases the reliability of the electronic mail sent between department users and outside organizations, he added.

"The upgrade will allow [the department] to save nearly Kentucky, page 46



Giga Information Group's Stephanie Moore says that if your IS shop has no experience using offshore programmers, year 2000 projects are "not the time to cut your teeth."

Client/server users must push for year 2000 tools

By Thomas Hoffman
SCOTTSDALE, ARIZ.

AUTOMATED SOFTWARE to test and convert legacy systems for year-2000 compliance is practically leaping off vendors' shelves. But for client/server and distributed systems, vendors' cupboards are practically bare.

That's only one of several shortcomings in distributed systems environments that exacerbate the problems the year 2000 will bring for project managers.

Unlike mainframe applications, end-user departments often own and operate distributed software.

In decentralized shops, end users aren't as aware of the

looming millennium bug as are information systems staffers. For that matter, IS often isn't aware of date-sensitive code that might reside in a desktop spreadsheet.

"There really are no ready-made" year 2000 tools for distributed systems, said Stephanie Moore, an analyst at Giga Information Group in Cambridge, Mass., who was chairwoman at a breakout session on the topic at the research firm's GigaWorld conference held here earlier this month.

LOOKING FOR FIXES

One remedy for the distributed systems millennium problem is to have user departments spearhead the fixes themselves, as one California-based bank is doing. End users "own the software, so they might as well fix it," said a year 2000 project manager at the bank, who requested anonymity.

For organizations that rely heavily on off-the-shelf applications, Moore recommends leaning on vendors not only to make their software compliant, but also to provide services and advice on fixing other applications in a user company's portfolio.

Some vendors are offering to refund customer payments if their converted software doesn't work as advertised. "But that's not good enough" for compa-

Distributed, page 46

OPINION

Computerworld goes back to the future

By Gary H. Anthes

COMPUTERS WERE expensive 25 years ago, but newspapers were cheap.

An annual subscription to Computerworld in 1972 would have set you back \$9, but I'll give you the June highlights here for free.



In 1972, Burroughs was big, and users debated writing their own operating systems

The computer world, and Computerworld, a quarter century ago were dominated by men, mainframes and IBM. Bill Gates was in high school. The mini-computer, the PC, Java, the World Wide Web and the year 2000 problem weren't yet on the horizon. Life was blissfully simple for the IS manager, whose greatest challenge was getting programs to run in less memory than you have today in your car's automatic transmission.

96K MEMORY

The lead story on June 14 describes — in excruciating detail and turgid prose — the new Burroughs B1700 business computer. Highly touted features include support for the new 96-column punched card, 96K bytes of memory and a price of \$475,000 (about \$1.3 million in today's dollars).

Computerworld, page 46

Introducing servers that will change the way you look at your current one.



©1997 NEC Computer Systems Division, Packard Bell NEC, Inc. NEC is a registered trademark and Express5800 is a trademark of NEC Corporation, used under license by Packard Bell NEC, Inc. The Intel Inside logo and Pentium are registered trademarks of Intel Corporation. Windows and Windows NT are registered trademarks of Microsoft Corporation. NetWare and Novell are registered trademarks of Novell, Inc. in the United States and other countries. 1997 AIM Hot Iron Award for Best Throughput Performer, Domain Server Mix (Windows NT) priced less than \$7,500 and Best Price/Performance, Domain Server Mix (Windows NT) priced between \$7,500 and \$15,000. AIM Technology is the performance measurement division of Network General. All other trademarks and registered trademarks are property of their respective owners.



The NEC Express5800™ series servers.

Once you've seen them, other servers will seem like toys by comparison. Because the Express5800 series is a complete line of expandable, scaleable, powerful and reliable servers that simply do more.

You'll find every NEC Express5800 server—from our most sophisticated to our most affordable—offers unique technology with an array of configurations broad enough to meet your needs. In fact, many of our servers offer hot-swap redundant power supplies and fans, hot-swap disks, error-correcting memory, comprehensive upgrade and expansion systems, and NEC management software.

But it's not just technology for technology's sake. Our servers, including the AIM award-winning LE2000, give you more performance for less money. Each features from one to four SMP-capable Intel Pentium® Pro processors, large capacity disks, dual I/O channels, and support for higher memory configurations. There's also RAID support and common options across models.

Most importantly, an Express5800 server connects your business to NEC, a worldwide technological leader in enterprise computing. We offer complete service and support options, including on-site service, as well as a full three-year limited warranty. In addition, every Express5800 server is certified to run on Microsoft Windows NT® and Novell NetWare.

So whether you're looking for your first server or your fiftieth, don't play around. Get an NEC Express5800. Call 1-800-456-9372, ext. 8778.



Kentucky beefs up schools' network

CONTINUED FROM PAGE 43

\$2 million in district and state funds, increase the network response rate to the Internet by fourfold and increase the network capacity to each of our 176 school districts statewide by 24 times," Couch said.

About \$1.4 million of that savings will come from slashed telecommunications costs. Because the new network is IP-only, all the school districts will use the state's frame-relay connection to link to the network, rather than pay for their own 56K bit/sec. and T1 lines for IPX connections.

SHARING THE DATA

Moving to Exchange 4.0 also will give the department an organized way to share, via public folders, all word processing, spreadsheets, database E-mail lists, group schedules and calendars in the school districts' intranet, Couch said.

When the department opted for Exchange, Windows NT Server was the natural choice — at least for its 176 district offices, eight regional service centers and the department's administrative offices. "The cost for us as an educational institution to switch to Windows NT Workstation and Windows 95 is \$85.50 per workstation and \$80 to \$90 for Windows NT Server," Couch said. By contrast, he claimed it would cost about \$1,000 to upgrade to a comparable NetWare/IntranetWare 4.x server.

NetWare won't disappear,

though. The Kentucky Department of Education will let its various school districts — about 50% of which are networked — choose their own operating systems.

NEW VS. SIMPLE

"NetWare is proven, reliable technology, and our network administrators are familiar with it. Windows NT Server, while easy to learn, is still relatively new," Couch said. "In rural parts of Kentucky, technical support is a big issue. If any of our schools want to keep NetWare, that's their decision."

But Windows NT Server is proving to be less expensive to implement than NetWare on the

department's wide-area network (WAN) links. The Kentucky Education Technology System continuation budget mandates that the department maximize the current WAN lines.

The simplest way to achieve that was to move to frame relay and run one network protocol instead of two.

The department standardized on TCP/IP and decided to eliminate Novell's IPX.

"Microsoft Exchange works best with Windows NT Server. And frame relay runs most efficiently on an IP-only network; Windows NT has a better TCP/IP implementation than NetWare, which only does IP tunneling," Couch said. □

SCHOOL SYSTEM

Why the Kentucky Department of Education switched from NetWare 3.12 to Windows NT Server:

- **Integration and coexistence with legacy systems and a new third-party application**
- **Costs \$900 less per server than a NetWare 4.x upgrade**
- **Ability to support 250,000 active connections and 700,000 user accounts**
- **Native support for TCP/IP**
- **Support for a variety of monitoring and administrative tools**
- **Better compatibility with the Internet and intranet services**

Distributed year 2000 tools lacking

CONTINUED FROM PAGE 43

nies that go out of business as a result of software failures, Phillip R. Murphy said.

Murphy is manager of year 2000 compliance at the National Council on Compensation Insurance, Inc. in Boca Raton, Fla. The company collects workers' compensation statistics in more than 30 states.

Like other year 2000 managers, Murphy said he will be satisfied with nothing short of full compliance by third-party vendors.

FEW SPECIAL TOOLS

There also is a dearth of tools available for firms that have developed their own distributed applications using development software such as Powersoft Corp.'s PowerBuilder and Mi-

crosoft Corp.'s Visual Basic.

Moore said the handful of tools vendors for distributed applications include the following:

- San Francisco-based Forecross Corp. (www.forecross.com), is a 16-year-old vendor that runs a software factory that converts C++ and legacy programs for customers such as AT&T Corp., Charles Schwab & Co. and Bear, Stearns & Co.
- Software Emancipation Technology, Inc. (www.setech.com) in

"There really are no ready-made" year 2000 tools for distributed systems, said Stephanie Moore, an analyst at Giga Information Group.

Lexington, Mass., has a Discover tool that is the leading conversion kit for C and C++ applications.

■ AstraTek, Inc. (www.astratek.com) in New York has created VisualAudit, a discovery tool that analyzes and identifies date-sensitive data elements in Excel worksheets, including date-formatted cells.

The software is a hit among Wall Street spreadsheet power users, Moore said.

AstraTek has extended VisualAudit to discover date-sensitive programming for programs developed with Visual Basic and Access.

There could be a strong need for such a tool by banks and brokerages. "If you're a [spreadsheet] power shop, you're going to be a little more sensitive to [year 2000]," said John Doggett, a vice president at BankBoston in Boston. □

Computerworld editor goes back to the future

CONTINUED FROM PAGE 43

The front-page story reads like a Burroughs sales brochure, and not a single user, analyst or company official is quoted.

Another front-page story tells of worries about the growing use of Social Security numbers as a personal identifier and of the "potential harmful consequences" of automated personnel systems. A committee to study the matter was appointed by U.S. Secretary of Health, Education and Welfare Elliot Richardson.

Elsewhere in the all-black-and-white issue, we learn that the average charge to the government by outside consultants for systems analysis is \$16.80 per hour. Today, Uncle Sam is paying five to 10 times that amount to fix the year 2000 problems created by those same people.

SYSTEMS MEN

Another story reports the results of a survey by the Association for Systems Management (ASM) that says the median annual salary for "analysts, senior analysts and IS managers" has reached \$16,739, or about \$45,000 in today's dollars.

According to the ASM, "Today's systems managers are candidates for executive positions because their training and skills bring a most needed quality to the executive ranks." But only if you are male, it seems; the ASM's findings are in a \$5 report, "Profile of a Systems Man."

But there were also systems women 25 years ago. Under a headline, "Gal Engineers Set Computer Meet," we learn of an upcoming conference of the Society of Women Engineers. Key-note speaker: U.S. Navy Commander Grace Hopper, head of Navy Programming Languages.

On the editorial page, a Viewpoint piece ponders whether user companies ought to develop their own operating systems. (As Dave Barry would say, I am not making this up.)

It tells of a company, Moses Plastics, that wrote "Osmoses" to run on the Marketronics 4000 Series computer, even though Marketronics apparently supplied a perfectly good operating system of its own.

I won't spoil it by telling you what happens to Moses, in case you haven't yet gotten to that

issue of Computerworld. (Hint: the company is no longer in business. In fact, most of the companies in the June 1972 issues of Computerworld are no longer in business, a notable exception being IBM.)

Computerworld was embarrassingly vendor-centric 25 years ago. One of the few user-oriented stories tells of Berteau Corp. in Irvine, Calif., reported to be the first buyer of an IBM 370/155 mainframe. A company official is quoted as saying the system arrived on a Friday, was up on Saturday, was accepted by the user on Sunday night and went into production Monday morning.

Eat your heart out, 1990s IS manager. □

Anthes is Computerworld's senior editor for special projects.

SHORTS

Hotel software

The Fairmont Hotel Management Co. in San Francisco plans to install Newmarket Software Systems, Inc.'s Global SFA sales force automation software. Fairmont plans to use the software at its seven properties and national sales offices nationwide. Terms of the agreement weren't disclosed. Newmarket Software Systems is based in Portsmouth, N.H.

Firm's Adage

Cumberland Packaging Corp., a Brooklyn, N.Y.-based manufacturer of Sweet 'N Low and other products, has licensed Systems & Computer Technology Corp.'s Adage enterprise resource planning software for companywide manufacturing, distribution and financial management. Cumberland will implement Adage on Data General Corp. Avion servers in a Microsoft Corp. Back Office environment running Windows NT. Terms of the agreement weren't disclosed.

The Internet

The World Wide Web • Intranets • Online Services

Briefs

Not ready for prime time

Most couch potatoes won't surf the Web on their TVs for at least three years. It will take that long to build the right hardware and create interesting content, such as weather reports, white-page directories and take-out food ordering, according to a recent survey of 93 Web developers and vendors.



Source: Forrester Research, Inc., Cambridge, Mass.

Site Server in beta

Microsoft Corp. started beta-testing Site Server 2.0 and Site Server Enterprise Edition 2.0, the newest components of its BackOffice suite of products that run on Windows NT Server. Site Server lets businesses customize the content and deployment of their World Wide Web sites. The Enterprise Edition contains features that let users conduct business on and manage their Web sites. Site Server will cost \$1,499. Site Server Enterprise Edition will cost \$4,999. Additional commerce sites on a single server will cost \$499 per site. Site Server is due to ship this summer.

Wireless Internet

WarpDrive Networks, Inc. in San Jose, Calif., plans late this month to announce broader availability of its wireless Internet connectivity service in bandwidth increments from 256K to 10M bit/sec. The service is now available in San Jose.

Middleware security

Candle Corp. in Santa Monica, Calif., is scheduled on June 30 to formally announce security software for IBM's MQSeries messaging middleware. Called MQSecure, the package offers message validation, authentication and encryption.

L. L. Bean puts folksy feel into its Web site

► Catalog company goes beyond static pages

By Mitch Wagner

L. L. BEAN, INC. views the Internet as a way of giving its catalog customers worldwide the same service they would receive if they walked into the company store on Main Street in Freeport, Maine.

"We look at this as an extension of our current business," said Steve Roberts, senior new-media analyst at L. L. Bean. "The Internet is a great place to further describe who we are as a

company, project our brand and personality online and also cut some costs."

Bean's World Wide Web site at www.llbean.com combines sales of about 1,000 of the company's 16,000 items with background information about the company.

USEFUL INFORMATION

That much is nothing new for an online retail site. But Bean has tried to take things a step further. Besides describing the



L. L. Bean's Steve Roberts says Web sales are low, but costs are even lower.

products, it gives customers detailed information about how to use them and offers information about the great outdoors, including guides to eight national parks. And Bean has tried to weave it all together into a site with the same folksy

watercolor look and feel of its paper catalog.

"The site is an improvement over a lot of the really early catalog sites that were nothing more than a translation of what was on paper to static Web pages," said Nicole Vanderbilt, an analyst at Jupiter Communications, Inc. in New York. "They don't limit themselves to the same kind of short blurb that's on catalog pages. As catalogers become aware of the unlimited number of pages available online, they can start to develop richer, lengthier and more topical content."

A simple information-oriented site when it went online two

L. L. Bean, page 49

Internet mail delivers the goods

► Features catch up to proprietary systems

By Barb Cole-Gomolski

IT'S GETTING harder and harder to distinguish Internet-based mail systems from most other electronic-mail systems out there.

A year ago, companies were trying to decide whether to move to Internet mail or to proprietary systems such as Lotus Development Corp.'s Notes. Today, most users said, the line has blurred, and even products such as Notes, Microsoft

CLOSER LOOK
Internet E-mail

Corp.'s Exchange and Novell, Inc.'s GroupWise — with their improved Internet Protocol hooks — are considered to be Internet E-mail software.

At the same time, Internet mail systems are beginning to incorporate the features previously available only in proprietary environments.

MIX AND MATCH

Those moves are a result of the overwhelming popularity of Internet-based mail systems, which let users mix and match clients and servers from different vendors and potentially reduce administrative costs.

"Everyone agrees that open

standards are the way to go," said Don Garvey, assistant vice president at Chubb & Son, Inc., an insurance company in Warren, N.J. Now the question is whether to pick a system that was designed from the ground up to run on IP networks or one that has recently gained Internet hooks, he said. Chubb

plans to move 10,000 users from a mainframe mail system to either Notes or Netscape Communications Corp.'s Messaging Server.

"There are few sites today that would install a completely proprietary mail system," said Paul Hoffman, co-chairman of the Internet Mail Consortium, an industry group in Santa Cruz, Calif. "This is a big switch from the old days, when one messaging vendor met your needs."

Other organizations, such as the Missouri Department of Highways and Transportation in Jefferson City, have adopted a dual strategy in which they run a mail backbone based on the X.400 mail transport standard in addition to an Internet gateway. The agency uses a Missive gateway from Wingra Technologies, Inc. in Madison, Wis., to

hook up to the Internet. That lets the agency leverage the security of Notes without losing out on Internet hooks, said Frank Senter, a senior information specialist at the agency.

Analysts also expect the widespread adoption of Internet

Message Access Protocol 4 (IMAP4), a more sophisticated IP messaging protocol, to advance Internet messaging. With IMAP4, companies won't have to sacrifice features to go to the Internet for messaging, said Mark Levitt, a research manager at International Data Corp. in Framingham, Mass.

There are more than two dozen Internet mail, page 49

Wrestling with Web privacy

By Sharon Machlis

A GROUP THAT oversees Internet standards is devising a way for World Wide Web sites to publish privacy policies and help users decide if their preferences match those of the pages they visit.

The World Wide Web Consortium

(WWWC) in Cambridge, Mass., will host the first technical meeting on the project, called Platform for Privacy Preferences (P3), late this month. It is one of several efforts unveiled earlier this month during federal Internet privacy hearings. Consortium officials said P3 is Web privacy, page 49

PRIVACY OPTIONS UNDER WWWC PROPOSAL

- I want to access all Web sites
- I will allow sites to share my data
- Sites may share my data if I can review the information
- Sites may use my data internally only
- Sites may use my data only for the specific reasons I give them
- I want to be nearly anonymous

Source: World Wide Web Consortium, Internet Privacy Working Group

INTERNET COMMERCE EXPO

INTERNET COMMERCE • INTRANETS • EXTRANETS

Los Angeles

September 8-11, 1997

Los Angeles Convention Center

Because it's not
business as
usual any more.

Your future is tied to doing business on the Internet and the World Wide Web. Internet Commerce, Extranets and corporate Intranets have changed the world of business as we know it. Whether you're a vendor with an Internet solution for the Enterprise... or a corporate decision maker looking for productivity enhancing products, you need to be at ICE.

For Exhibitors: a proven to deliver event.

Thousands of corporate buyers will be there looking for the new products and services that make Intranets, Extranets and Internet commerce practical and secure.

**For Attendees: the coolest way to find
the hottest Internet solutions.**

Leading Internet vendors and solution providers will show you how to increase productivity and profitability using the latest Internet technology.

**Join your peers at this business-critical
Expo and Conference.**



INTERNET SOLUTIONS FOR THE ENTERPRISE

IDG

An International Data Group Company

Sponsored by:

IBM

Microsoft

COMMERCENET

OPEN MARKET

ORACLE

**Deloitte &
Touche LLP**

NETSCAPE

**VIRTUAL
LOGISTICS**

Sponsoring
publication:

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

www.idg.com/ice

ICE, Internet Commerce Expo, and Internet Solutions for the Enterprise are service marks of International Data Group.

Please put me on ICE! I would like more
information on: Exhibiting Attending

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Phone. _____ Fax. _____

e-Mail. _____

111 Speen Street, P.O. Box 9107, Framingham, MA 01701.

Phone: 800-667-4ICE (4423) Fax: 508-370-4325

CW

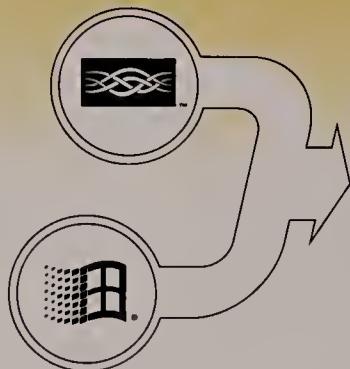
**Grant me the strength to resist fads,
The wisdom to recognize legitimate plans,
And the sheer blind luck to know the difference.**

The IS Manager's Prayer

So, what makes BackOffice different?

*There are things we've learned
in twenty years of connecting people
and machines and information
that can help make the next twenty
years a lot less stressful.*

Now, for the first time, we can offer you not just another bunch of applications but a sane and sensible approach to evaluating technology solutions. It's called Microsoft® BackOffice™ and it delivers something you probably don't expect from technology—simplicity.



BackOffice works on Windows NT® Server and Windows NT Server works on pretty much any system you might have in place. You can add a single Windows NT Server into your NetWare or UNIX environment and start running a BackOffice-based solution tomorrow. And Windows NT Server is tremendously scalable. So you can actually move the technology forward in well-planned steps, instead of the white knuckle, all-or-nothing leaps IS people are frequently forced to make.

Microsoft BackOffice
is a family of server
software applications
built around three core
philosophies.

Integration: You should be able to add new server capabilities into your existing system without starting from scratch. Moreover, you should expect cooperation between server products.

Comprehensiveness: Every BackOffice server will do its appointed task entirely and efficiently. Furthermore, the family of BackOffice products, taken together, covers a comprehensive range of business needs. And as businesses demand more from technology, BackOffice will continue to anticipate these demands.

Simplicity: A solution should not be any more difficult than it has to be. Thanks to their integration with Windows NT Server, thanks to their familiar interface, thanks to a bunch of basic design decisions, you will find BackOffice server applications to be easier to install, deploy and administer than any other system. It's that simple.

As goes BackOffice, so goes Windows NT Server. These three philosophies also apply to the relationship between BackOffice server products and Windows NT Server. Not only is Windows NT Server famously easy to administer, but its integration with the BackOffice family of products means that most administration tasks need only be performed once—for example, you just create one account per user, no matter how many applications they use. And Windows NT Server is inherently scalable—you can run a single Windows NT Server in a mixed environment or you can build a global network that runs entirely on Windows NT.



What about the Internet?

For quite some time now people have been promising you that the Internet/intranet would change the way you do business. But they never explained how that was supposed to happen.

Microsoft BackOffice provides a range of software solutions that embraces Internet standards and provides all kinds of Internet and intranet functionality. Giving people access is easier. Creating killer Web sites is easier. Creating an extranet for your outside vendors and partners is easier. Doing business on the Web is easier. And that makes it easier to decide on a smart Internet/intranet strategy for your company.

Well, what about It? Microsoft Windows NT Server has an Internet strategy built in. It's called Internet Information Server. IIS lets you create, deploy and administer a simple Web site or a full-blown corporate intranet. IIS lets people in your organization view information stored in BackOffice or existing systems using a standard browser. IIS includes: Active Server Pages so programmers and designers can create dynamic content; FrontPage™ server extensions for one-button publishing to the Web; NetShow™ conferencing software for multimedia on the Web; and more.



www.microsoft.com/backoffice/family

There is a BackOffice product for every business problem we can name. When you come up with more problems, we'll come up with more BackOffice solutions.

Windows NT Server

This is a multipurpose operating system capable of handling applications, file-and-print, communications and the Web. It includes Internet Information Server, a powerful transaction server and DNS server. And, by the way, it's the operating system that makes BackOffice work. We believe it is the future of network computing.

Exchange Server

This is an Internet standards-based server that delivers powerful messaging and collaboration capabilities. More than e-mail, Microsoft Exchange Server gives you business solutions like scheduling, group contact lists and task management.

SQL Server

This tremendously scalable, high-performance RDBMS features Internet integration, integration with desktop tools and applications, and an open-system architecture, making it a superior platform for delivering line-of-business and data warehousing solutions.

Systems Management Server

This allows you to centrally manage and troubleshoot your entire PC network—desktop and server computers. You can inventory hardware and software, deliver new software and perform diagnostic services—all from a single location.

SNA Server

SNA Server gives PC network users reliable access to host systems—from AS/400 machines to large mainframe systems. SNA Server can be used to support line-of-business applications like decision support, Internet/intranet access and online transaction processing.

Proxy Server

Proxy Server allows you to extend secure Internet access to the entire organization, easily and cost-effectively.

Future Servers

We are working on new server solutions and technologies right now—increasingly sophisticated online commerce solutions, for example, and the next generation of tools for the rapid creation of rich Web sites and Web-based business applications. You can count on seeing these and other new ideas built into BackOffice with the same attention to integration, comprehensiveness and simplicity that sets our current products apart.

Microsoft®

Where do you want to go today?™

How to buy

There is a wide range of products in the BackOffice family. You can get them in two different ways.

One-stop: get the BackOffice Server suite—including Windows NT Server, Exchange Server,

SQL Server™, Systems Management Server and SNA Server. **Pick-and-choose:** get any individual server or combination of servers according to what you need and when you need it.



Together, the
whole is greater
than the sum of
its parts.

***Try to imagine champagne
without the bubbles.***
Windows NT Server makes
BackOffice possible.
BackOffice makes Windows
NT Server powerful.



*BackOffice is not a noun.
BackOffice is an adjective. For
example, if you did your job well,
collaborated effectively with your
coworkers and were basically
enjoyable to work with, you'd be
a BackOffice kind of person.*





www.microsoft.com/backoffice/vision

○ ○ ○ ○ ○ ○ ○

Internet mail delivers

CONTINUED FROM PAGE 47

en IMAP4-compliant servers available now, and twice as many IMAP4 clients.

Users who migrated to Internet E-mail systems said they have reduced their administrative load and now support more users per server than with their legacy systems.

"Before we migrated, our mail administrator would have to come in on the weekends to do maintenance on the system," said Robert Massey, an engineering systems administrator at Wright Medical Technology, Inc., a manufacturer of artificial joints in Arlington, Tenn.

Wright Medical is moving approximately 400 users from Lotus' CC:Mail to Sun Microsystems, Inc.'s Sun Internet Mail Server.

Although Internet mail systems have come a long way, there are still issues that keep corporations from pulling the plug on their closed, legacy mail systems.

Hoffman said security and improved management tools need work.

"The fixes for problems like spoofing [in which someone bounces junk E-mail at your mail server] have yet to be 'pro-

A sample of mail clients designed to work only on the Web

Vendor/product	Function	Price
Net Manage/ Z-Mail Pro 6.1	Supports advanced features of IMAP4, including the ability to store mail on servers, share mailboxes and keep hierarchical folders.	\$79
Micro Computer Systems/ Calypso 2.1	Lets users launch their browser by selecting a uniform resource locator in the body of a message. Users can access and view multiple E-mail accounts from one mailbox.	\$59.95
E Corp./ EMail 97	Supports Lightweight Directory Access Protocol and advanced message filtering. The client software automatically selects and creates icon-driven shortcuts.	\$29.95

ductized.' In the area of security, the addition of digital signatures will help button up Internet mail," Hoffman said.

Overall, the once-polarized worlds of Internet mail and pro-

prietary mail have moved much closer.

For large sites, it means they can once again evaluate products on their merits, as opposed to whether they

support IP standards.

"Within six months, it will be even harder to tell the difference between an Internet mail system and the ones we used to call proprietary," Garvey said. □

Web privacy gets focus

CONTINUED FROM PAGE 47

one piece of an overall plan to help consumers implement their own privacy policies each time they surf the Web.

P3's goal is to make it simpler for consumers to decide if they want to provide personal information to a Web site. For example, some people would be willing to provide details about their favorite reading subjects to receive personalized news pages — but not if the site resells data to other marketers.

Some sites already publish privacy policies, but critics charge that those can be diffi-

cult to locate on the site.

Under P3, users would enter privacy preferences into their browsers based on a wide range of options regarding the circumstances under which they wish to release their names, addresses, hobbies, interests and the like. For users who don't want to go through such a huge list, there could be several broad preset options, ranging from remaining mostly anonymous to accessing all sites regardless of privacy policies.

"I think that's certainly something we would be inter-

ested in exploring," said Shadrach Todd, manager of systems development at Time, Inc. New Media in New York. Time's site already publishes a privacy statement and collects personal data, and Todd said he was interested in the possibility of letting users control the types of data they provide.

A consortium of corporations and advocacy organizations, the Internet Privacy Working Group, is meeting separately to develop language for defining users' privacy preferences and Web site policies. P3 will devise technology that implements that language by letting user preferences be automatically compared to a site's policy.

If someone seeks more protection for personal data than a

site provides, the user would be asked if he wanted to make an exception to access the site.

If user preferences and site policies match, the actual data exchange would be handled by Open Profiling Standard, another standard-in-the-works recently announced by Microsoft Corp., Netscape Communications Corp. and Firefly Network, Inc. Yet another effort, called Truste (pronounced "trustee"), is trying to come up with a way to ensure that sites adhere to the policies they post.

The World Wide Web Consortium demonstrated a P3 prototype during Federal Trade Commission (FTC) privacy hearings earlier this month. A version that commercial webmasters could use is probably six to 12

months away, according to Joseph Reagle Jr., a policy analyst for the consortium.

The various efforts have been launched in part to head off possible government moves to protect privacy in cyberspace. But not all consumer advocates are convinced that self-regulation will work.

Marc Rotenberg, director of the Electronic Privacy Information Center in Washington, said he was unnerved during FTC hearings when a direct marketing advocate "could not come up with a single example" of information about children that shouldn't be resold.

"We need to establish some government safeguards," Rotenberg said. "Privacy should be protected by law." □

L. L. Bean's folksy Web site

CONTINUED FROM PAGE 47

years ago, the site began to offer online sales last November.

Bean, like many catalog companies, went online partly to contain costs. Paper and postage costs make mailing a print catalog very costly, and the Internet is a far less expensive way to reach customers.

For security, Bean uses Secure Sockets Layer, the Internet standard for encrypting information over the Internet.

ENOUGH SECURITY

Roberts said Bean is satisfied with the level of security now available for Internet transactions, although the company is investigating emerging technologies to further increase security, including the Secure Electronic Transaction specification

for payment processing over the Internet. Bean uses IBM servers. It picked Big Blue partly because of customers' perception that IBM would be safe.

But security still worries Bean customer Tom Needham of Parma, Mich., who uses the Web site to search for campgrounds and request catalogs but not to make purchases.

"Although the Web is great for browsing, all my purchasing is done through snail mail," Needham said. "Although L. L. Bean is a very reputable company, I still have a problem with my card numbers floating out there."

Roberts said the Bean site is profitable, but he wouldn't provide specific revenue or cost figures. Although sales are small,

costs to run the site are even smaller, he said.

Still, at Bean, as at many online catalogers, online sales are a tiny fraction of print sales and are likely to stay that way for a long time [CW, May 26]. Bean looks at the Internet as a long-term investment that might not become significant for decades.

NEVER CATCH ON

Retail analyst Alan Millstein, editor and publisher of the "Fashion Report," a newsletter in New York, said Internet clothing sales will never be significant.

"People like to touch and feel clothing, or at least be able to see it in a four-color catalog," Millstein said. "All these companies have hopes, but my prediction is that the Internet will come to nothing in the way of apparel."

Bean customer Bruce Van Houten of Windsor, Vt., agreed — at least for now. "I still find

their paper catalogs easier to use and just plain more fun to look at," he said. "I am a systems administrator at a hospital and

stare at this screen most of the day. I visit Web sites such as this out of curiosity but seldom use them." □

Taking in-house control

Initially, L. L. Bean outsourced the creation of its Web site to Boston-based consultants Strategic Interactive, but since then the company has been bringing the effort in-house, approximately doubling internal staffing of the Web site to about 30 people over the past six months, according to Steve Roberts, Bean's senior new-media analyst.

The company was satisfied with the work that the consultants were doing; it just wanted to maintain better control and to more easily reuse art and copy from the print catalog online.

Maintaining that connection is important to Bean.

Recently, the company launched an online feature called QuickShop, designed to streamline online shopping. While other online catalogs require users to find products online if that is where they will order them, the QuickShop feature allows Bean customers to look up an item in the print catalog and then go online and order it. It was designed for people who find online ordering more convenient than telephone, fax or mail but who still would rather have the experience of browsing through a paper catalog, Roberts said.

— Mitch Wagner

When a company is synonymous with the Web, it needs servers that are synonymous with unstoppable.

Which explains why **Netscape™ Communications** chooses 64-bit **DIGITAL AlphaServer™** systems

to help handle the *135 million* hits its Web site receives daily. Ultra-reliable AlphaServers are also

Netscape's primary backup *The Webmaster's Prayer* system—because netscape.com

simply can't afford to be down. Sheer  muscle isn't the whole story, though.

May your content be hot.

Your graphics be cool.

And your servers be DIGITAL.

Scalability counts, too. Witness **AltaVista™**

the definitive Web search site. Zero to 30

herculean task of indexing the entire, ever-



Internet Software, where AlphaServers run

million hits a day, in just 16 months. Plus the

expanding World Wide Web. All gracefully

accommodated by the flexible, expandable power of Alpha. From servers to software, from networks to

global, 24-hour support, **DIGITAL** delivers total Internet and intranet solutions. In any size, with unlimited

room to grow. Call **1-800-DIGITAL, ext. 325**, or surf to www.ads.digital.com/web, and make the

DIGITAL edge your own. Or sing the Webmaster's Lament: "Gee, I guess we should have gone with **DIGITAL**."

digitalTM
Whatever it takes.SM



Marc Andreessen
U.S. Webmaster
Netscape Communications

Remember when you built it, you always had a clear sense of direction? We do.



Business networks from Cabletron. A simpler way to work.

Ever feel like you're spinning your wheels trying to keep up with the newest technology racing onto the networking scene? Many vendors continue to hype their products as the next best thing, only to discontinue them a year or two later. Meanwhile, you may have to rip out your entire infrastructure just to replace these obsolete products.

Envisioning networks as more reliable, faster and less expensive to own, operate and maintain, Cabletron developed the blueprint for next-generation networking. Cabletron's Synthesis strategy combines packet and cell switching, network and systems management, and the industry's largest service organization to bring a new level of performance, security and flexibility to networking. Proof that this strategy protects investments comes from the fact that our MMAC, MMAC-Plus and SmartSwitching platforms have all adapted to support newer technologies like ATM, Fast Ethernet and Gigabit Ethernet.

Times change. Your network shouldn't have to. And it won't with Cabletron's infrastructures that can easily migrate to the technologies of tomorrow. Simplify your network without going back to the drawing board. Call (603) 337-0930 for more information, or visit us on the Web at www.cabletron.com.

CABLETRON
SYSTEMS

The Complete Networking Solution™

The Enterprise Network

LANs • WANs • Network Management

Briefs

Cheap switch

Intel Corp. in Santa Clara, Calif., last week slashed the price of its eight-port 10/100M bit/sec. switch by roughly 40%, from \$4,995 to \$2,995. Each port can support a 10M or 100M bit/sec. connection. Intel also makes 10/100M bit/sec. adapter cards that PCs need to connect to the switch ports.

NT E-mail package

Pacific Software Publishing, Inc. in Bellevue, Wash., recently released NewsMail, a broadcast electronic-mail package that runs as an application on Windows NT Server and allows access from a browser. It was designed to let users send mail to multiple recipients without using "cc," "bcc" or alias group lists. It is available now and costs \$1,999 per server.

AOL to use 56K modems

AOL Networks, a subsidiary of America Online, Inc., announced last week that it will deploy 3Com Corp.'s U.S. Robotics X2 56K bit/sec. technology in the AOL network. To support access with X2 technology in its network, AOL will upgrade at least 120 cities by Aug. 31 and 80 more cities by the end of September. By year's end, approximately 65% of AOL's network will be based on 3Com/U.S. Robotics' Total Control remote access equipment.

Only about 10% of organizations trying to create a single, end-to-end TCP/IP network throughout their organization will succeed within the next five years. Most will retain segments using other protocols.

Source: Gartner Group, Inc., Stamford, Conn.

Tivoli feels urgent need for support

► Company moves to ramp up TME 10 resources

By Patrick Dryden

SELDOM DO IT vendors acknowledge their shortcomings, let alone take users to breakfast to explain their efforts to make good.

Yet executives from Tivoli Systems, Inc. have gathered customers for penance and pancakes in five cities since the company's user conference last month.

Information systems managers feared the lack of resources would slow their multimillion-dollar implementations of tools from Tivoli, parent company IBM and vendor partners for managing distributed client/server networks [CW, May 19]. One IS team, for example, came to the conference to audition Tivoli speakers so they could snap up recognizable experts to bring home for staff training.

"Even if they don't discuss

ENTERPRISE MANAGEMENT

support problems, we bring it up," said Jan Lindelow, president and chief operating officer at Tivoli in Austin, Texas. The goal is to make users and prospective users "aware of the sophisticated resource requirements and what we're doing to provide them," he said.

CUTTING COSTS

The Tivoli Management Environment (TME 10) is a framework that integrates tools for controlling distributed clients, servers, networks and applications. Large organizations adopt TME 10 and other enterprise managers in the hopes that they eventually will cut overall management cost and complexity.

But implementing TME 10 demands experts (who are scarce), careful planning and a fat checkbook. Sound familiar?

"This is similar to SAP R/3

TIVOLI TIDBITS

Tech tips

Publications on TME 10 topics, including "redbook" installation guides, are available from IBM's International Technical Support Organization at www.redbooks.ibm.com or www.elink.ibmlink.ibm.com/pbl/pbl.

TME is like implementing SAP R/3

Reuters Holdings adopted TME 10 last month to manage its global network and systems supporting 15,500 employees and customer sites. Tivoli's biggest sale to date exceeds \$15 million. Large users such as Amoco Corp. expect TME 10 implementation to take nearly two years.

implementation," said Wayne Simmons, senior consultant for management tools at Ernst & Young.

Users are pressed for resources to achieve total enterprise management, Simmons said. Also, they must re-engineer their IS organization and processes around the chosen management platform, he said.

To feed the need for TME 10

Tivoli, page 57

Enterprise nets gain flexibility

By Bob Wallace

A FLURRY of internetworking products announced last week were designed to give users more flexibility in managing change in their enterprise networks.

The products — which include everything from Gigabit Ethernet switches to remote access server add-ons — could give end users faster access to server farms and remote users faster access to the network at a lower price.

■ **Cabletron** Systems, Inc. in Rochester, N.H., announced a module that will let information systems managers save money when extending Asynchronous Transfer Mode (ATM) away from the backbone.

"Before, the only choice was to use Cabletron's [higher-end] MMAC-Plus switch to provide ATM connectivity to smaller pockets of users. But that was expensive," said Steve Yantz, a telecommunications specialist at Fort Knox in Fort Knox, Ky. "We need to extend the reach of ATM to more broadly support high-speed applications such as distance learning, desktop video and warfare simulation."

Adding ATM switching to a MMAC-Plus currently costs \$40,000. Adding ATM to a Cabletron SmartSwitch using the new SmartCell 6A000 ATM Switch Module costs \$9,995. It will ship in 90 days. It has 16 switched 155M bit/sec. ATM ports, and up to three can be used in a single SmartSwitch 6000.

■ **Foundry Networks**, Inc. in Sunnyvale, Calif., announced two stackable Gigabit Ethernet switching systems designed to give users higher speed and more reliable connections to

The products could give end users and remote users faster access at a lower price.

Mobile users stay up-to-the-minute

► Products offer data synchronization help

By Mindy Blodgett

AS THE RANKS of road warriors grow and the tasks they must perform become more complex, remote data synchronization gets to be a bigger problem.

Vendors are scrambling to find ways to synchronize enterprise and remote databases, according to industry observers. But there are products available now.

STRATEGIC NEEDS

"Nowadays, there are many more strategic applications being performed on a mobile device," said Karen Scherberger, an analyst at Gartner Group, Inc. in Stamford, Conn. "So you have a complex distribution-of-data problem. The issue is, how

do you enable the mobile worker to, say, write up orders from the field with up-to-date information from the corporate database without synchronization?"

SyncKit from Syncrologic, Inc. in Atlanta addresses that problem. SyncKit was designed to synchronize data in both directions between a server database and a database on a desktop or laptop that is occasionally connected. For exam-

ple, a user could synchronize Sybase, Inc.'s SQL Anywhere database with an Oracle Corp. database, via a laptop.

Sales force automation vendors such as Brock International, Inc. in Atlanta and Sales Vision, Inc. in Charlotte, N.C., have licensed SyncKit technology for integration with their own products. Other vendors, such as Xcelenet, Inc. in Atlanta,

Mobile users, page 57

SYNCKIT FEATURES

- Support for ODBC-compliant databases to synchronize databases from different vendors
- The ability to automatically resend files lost during communication
- A suite of administrative tools to allow users to diagnose problems remotely

Products, page 59

Microsoft Certified Professionals: Around here technology

You see 'em out in the field solving technical problems. They're the ones you call when you need someone with expertise to walk in and do what needs to be done. They're Microsoft® Certified Professionals. They've passed performance-based exams and continue to hone their relationship with Microsoft so they're always current on the latest developments in technology. No one knows the BackOffice™ family of products more thoroughly. Each and every MCP is an expert in one particular

aspect of Microsoft technology while possessing sterling overall technological ability. You can access this expertise either by adding MCPs to your staff or by working with a Microsoft Solution Provider organization, where you'll find MCPs on staff. From planning and implementation to support, Microsoft Certified Professionals are proven performers in their field, ready to produce results when and where you need them. To find out more, visit this address: www.microsoft.com/techexperts/ or call (800) 836-8282, Dept. B407.



***we call them
wranglers.***

***Microsoft Certified
Professionals undergo
extensive testing
in a variety of
technical areas.***

Intranet

Database Design

***Application
Development***

Client / Server

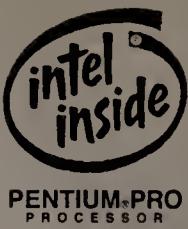
Systems Integration

Applications Support

Internet

***Microsoft®
CERTIFIED PROFESSIONAL***

AViiON



THE SERVER TO GROW ON

Buy what you need, add as you grow.

It's as simple as that.

As the Nautilus grows, it expands its shell section by section. This is the idea behind our AViiON® AV 20000 server based upon Data General's NUMALiiNE™ technology and Intel Pentium® Pro processors. When you need to expand your company's enterprise computing capabilities for data warehousing or large database applications, you just add another building block, protecting your original investment.

Our scalable building block approach also means that you can start with our affordable, entry-level configuration that grows modularly to surpass many of today's systems. Plus, you get all of the benefits of "big" systems – robust management, high availability and clustering. And, our CLARiiON® RAID subsystem, integrated with the AV 20000, provides extensible, fault-tolerant storage.

So contact Data General and learn more about the scalable AV 20000 – the best value in enterprise computing.

 **Data General**

www.dg.com 1-800-DATA GEN

Data General welcomes Oracle8.™ Combine it with our AV 20000 and you're in a new level of performance.

AViiON and CLARiiON are registered trademarks and NUMALiiNE is a trademark of Data General Corporation. The Intel Inside Logo and Pentium are registered trademarks of Intel Corporation. All other brands or products are the trademarks of their respective holders. © 1997 Data General Corporation

Tivoli ups TME 10 resources

CONTINUED FROM PAGE 53

expertise, Tivoli officials have made changes in the following areas:

■ Staffing: Fifty more field service engineers will be trained, for a total of 200 by November. The company just added 50 consultants to Tivoli Professional Services and is dedicating 40 consultants from IBM Global Services to TME 10.

■ Telephone support: The company opened a full-time call center June 2 for TME 10 users at (800) TIVOLI8. On July 7, Tivoli will link it to the main IBM call center to unify and clarify help for Tivoli and IBM products and eliminate "ping-pong" support problems.

■ Trainers: A formal program has been designed to provide on-site training for TME 10 operators, so users won't have to seek help from three Tivoli organizations that currently split responsibility for training.

■ Publications: Forty-six "redbooks," or technical implementation guides, about TME 10 will be added to the 16 that are available now.

"It's good to hear Tivoli acknowledge the problem and take steps to correct it by hiring and training," said Richard

ENTERPRISE MANAGEMENT

Weiss, an architect for enterprise management systems at Charles Schwab & Co. in San Francisco.

Information technology vendors and IS groups face the same predicament, however. "Expertise is in short supply and high demand," he said.

While these catch-up efforts are valuable, they don't address the underlying problem that makes implementation so painful, said Ray Paquet, a research director at Gartner Group, Inc. in Stamford, Conn.

"Tivoli should be trying to make the software less complex instead of trying to train more experts," he said.

'COOKBOOKS' ON THE WAY

On this front, Tivoli will start building default configurations into TME 10 products so users can get running sooner, Lindelow said. Such streamlining is possible, because consultants are gaining real-world experience at user sites and compiling setup steps into "cookbooks."

By contrast, users of Unicenter TNG from Computer Associates International, Inc. report fewer start-up hassles. That

management suite is self-contained, not a framework for integrating a best-of-breed collection of tools.

And those OpenView users who want to cover more than networks with tools from Hewlett-Packard Co. won't come up short on support. HP has melded its network and systems management development groups and backed the OpenView suite with its 1,200-strong global consult-

ing and integration service.

To catch up, Tivoli has shelved plans to offer a scaled-down version of TME 10 for smaller users. That package would reduce the "vast flexibility" causing TME 10's complexity, Lindelow said. "That has to wait until we fix the other problems for large users," he said.

TME 10 can do so much that "it is its own worst enemy," Lindelow said. □

Right now, get the AltaVista™ Security Pack—an AltaVista Tunnel 97 Starter Kit, plus AltaVista Firewall 97 with 25 nodes—for only \$2,995.* Our "active" firewall actually detects and responds to attacks. And AltaVista Tunnel lets you create a secure virtual private network using the Internet. For OnSite Computing wherever you are, call one of our Business Partners today.

SHL Systemhouse
(905) 282-5700

AVNET COMPUTER
(800) 426-7999

MicroAge
(800) 814-5305

*List price. ©1997 Digital Equipment Corporation. AltaVista is a registered trademark of Digital Equipment Corporation. All other products and services mentioned are trademarks of their respective companies.

AltaVista Firewall & Tunnel

OnSite Security

<http://altavista.software.com>

Mobile users get synchronized

CONTINUED FROM PAGE 53

ta, offer similar products. Large vendors

such as Microsoft Corp. are

expected to offer similar technology when the market gets large enough, according to Jack Gold, an analyst at Meta Group, Inc. in Boston.

"The need is definitely growing out there for this kind

of tool kit," Gold said. Jared Daum, manager of business solutions development at Maersk, Inc., a shipping company in Madison, N.J., said his company at first tried to write its own synchronization code in order to supply its 200-person mobile sales force with updated shipping and sales information.

"But we had to rebuild the database once a week, and we still had the problem of folks needing to come in for a week or two every quarter to fill out forms," Daum said.

So Maersk turned to SyncKit. Daum wouldn't say what the implementation cost the company, but he said a cost/benefit analysis has shown that it will pay for itself in six months.

Remote and mobile users now get incremental updates to their databases rather than a complete database exchange, which reduces the data flow 95%, Daum said.

The product works with databases from many vendors that use the Open Database Connectivity data-transfer specification. SyncKit comes with a suite of tools to diagnose systems problems. It costs about \$20,000 per server and \$210 per user for a typical 200-person implementation.

Synchrologic's technology is based on a three-tier architecture that isolates the application and database from the synchronization and data sharing logic. □

SHORT

Multisource access

Fulcrum Technologies, Inc. in Ottawa is shipping Fulcrum Knowledge Network, software that pulls data from networked data sources using Fulcrum's client software, World Wide Web browsers or Microsoft Corp. Outlook and Exchange clients. Using the software, users can access data on Web servers, file systems, messaging servers and databases. The client/server software costs \$400 per user.



DECISION SUPPORT SOLUTIONS

Powers lawn mowers, toasters, humidifiers and repeat sales.



How do you turn your business data into a sizable business advantage? We offered Sears a versatile power tool: the IBM RS/6000. By giving them a choice of the leading database software, the RS/6000 provided Sears with the flexibility to design a truly custom data warehouse. And, with its award-winning UNIX® operating system, AIX®, the RS/6000 easily manages their existing data. It adds up to a decision support system that helps Sears better serve their customers and helps keep their business growing, too. To see how an RS/6000 solution can power your business, stop by www.rs6000.ibm.com/solutions or call 1 800 IBM-2468, ext. FA059.

IBM, RS/6000 and AIX are registered trademarks and Solutions for a small planet is a trademark of IBM Corp. UNIX is a registered trademark in the U.S. and other countries, licensed exclusively through X/Open Company Limited. All other company and/or product names are trademarks or registered trademarks of their respective companies. ©1997 IBM Corp.

Solutions for a small planet™



Products boost flexibility

CONTINUED FROM PAGE 53

centrally located server farms.

Today, most companies use 100M bit/sec. pipes to server farms, said Skip MacAskill, an analyst at Gartner Group, Inc. in Stamford, Conn. Gigabit Ethernet pipes offer 10 times more bandwidth, which is important as firms run more demanding applications on fewer servers.

Foundry's TurboIron Switch has four Gigabit Ethernet ports and can be equipped to support up to two more. The base system costs \$11,995. The single- and dual-port expansion cards cost \$2,495 and \$3,995, respectively.

Foundry also announced the TurboIron Switching Router, which adds high-speed routing to the Gigabit Ethernet switch. It has the same number of ports

and supports major routing protocols.

Deploying switches with built-in routing simplifies network administration by reducing the number of stand-alone devices that need to be managed.

It costs \$15,995 and can be expanded with up to two extra ports. Both products will ship next month. Foundry plans eight- and 16-port Gigabit Ethernet switches and routing upgrades in the fourth quarter of this year.

■ Cisco Systems, Inc. in San Jose, Calif., announced asynchronous dial-up modules for its midrange 3600 remote access server that let users save money by supporting more end users without buying additional systems. Cisco has added 16- and 32-port units to the products, which

had been available in only four- or eight-port configurations. Users that topped out with the lower-density modules had to buy more servers at anywhere from \$1,800 to \$4,800 apiece. The new modules can be added to all 3600 models.

Cisco also announced a module that lets users tie a 3600 remote access server to a Fast Ethernet backbone network, which is good news for Dave Meyer.

"Connecting the remote access server

to a Fast Ethernet backbone is appealing because [the 100M bit/sec. technology] is widely used in building and because you don't need any intermediary equipment," said Meyer, director of the advanced networking technologies center at the University of Oregon in Eugene.

The 16- and 32-port modules will cost \$2,600 and \$4,600, respectively. They ship this month. The Fast Ethernet module is available now for \$3,000. □

New internetworking products

Vendor	Product	Benefit
Cabletron	SmartCell ATM Switch Module	Extends ATM from backbone networks for less money
Foundry	TurboIron Switch, TurboIron Switching Router	Both products provide fatter pipes to server farms; TurboIron Switching Router also has built in high-speed routing
Cisco	3600 remote access server modules	Server supports for more remote dial-in users; can hook to Fast Ethernet LANs

NEW PRODUCTS

BMC SOFTWARE, INC. has announced the Patrol Knowledge Module for NetWare, software that lets administrators view a wide range of Novell, Inc.'s NetWare server indicators.

According to the Houston company, the software monitors multiple file servers and more than 150 NetWare server parameters for proper settings.

Pricing starts at \$4,500.

BMC Software
(713) 918-8800
www.bmc.com

TEKTRONIX, INC. has announced Spotlight Network VideoServer System, a network video streaming system that lets companies provide instant full-screen, full-motion video on demand for training and other purposes.

According to the Wilsonville, Ore., firm, the system includes a video server, a video encoder and a video browser plug-in. The server stores video streams and then delivers individual streams on demand or via a standard Internet Protocol multicast.

Pricing is based on the number of streams. A 30-stream system costs \$45,000, and the video encoder costs \$19,995.

Tektronix
(503) 627-2779
www.tek.com

ACCTON TECHNOLOGY CORP. has announced Cheetah PCI adapter, a Fast Ethernet adapter that delivers 100Base-TX connections.

According to the San Jose, Calif., company, the adapter is inexpensive enough to create a 100M bit/sec. workgroup at the cost of a 10M bit/sec. workgroup.

Cheetah PCI costs \$59 for a single adapter.

Accton Technology
(408) 452-4900
www.accton.com

LIEBERT CORP. has announced SiteNet Integrator Load Control Module (LCM) to integrate remote Uninterruptible Power Supply control, environmental monitoring and site security in Liebert's SiteNet Integrator.

According to the Columbus, Ohio, company, the LCM provides remote power management of connected equipment loads, allowing the network manager to control remote equipment through simple on/off commands or by programming the SiteNet Integrator to automatically respond to alarm conditions.

Pricing for the LCM is \$825.
Liebert
(614) 888-0246
www.liebert.com

directory search mail firewall forum tune me

* JUST ADD BROWSER

Put the power of AltaVista to work for you. Search the Web with AltaVista Search. It's fast, it's easy, it's free. Just add AltaVista to your browser and you're on your way to answers.

AltaVista Search

OnSite Knowledge

http://altavista.software.com

brilliant WINNERS

COMPUTERWORLD'S CUSTOM APPLICATION CONTEST



The 1997 Windows World Open winners receiving their awards from Bill Gates, Chairman and CEO, Microsoft Corporation.

1 José Miguel Vásquez,
Cerveceria Polar, Business
Intelligence Systems

2 Tony Pizi, **Merrill Lynch**,
Core Business Systems

3 Autumn Wagner,
**California State Automobile
Association**, Customer
Service/Customer Support
Systems

4 Jim Mann, **Lawson
Products, Inc.**, Employee
Information Access Systems

5 Greg Warner, **Stepan
Company**, Process Control
Systems

6 John Athans,
**Athans & Taylor Chartered
Accountants**, Workflow
Systems and Collaboration
Process Systems



The Windows World Open Founding Sponsors, Computerworld, Microsoft, and Softbank Comdex as well as sponsor WallData are proud to congratulate the winners of this year's 1997 Windows World Open. In its sixth year, the Windows World Open is an international competition that awards developers and their companies for innovative custom application work on the Microsoft Windows® platform.

Our sincere thanks to all entrants and finalists for making this year's competition the best ever!

For more information about this year's competition and the winning/finalists applications, check out www.computerworld.com/marketing/wwopen or for inquiries about next year's Windows World Open, visit www.wwopen.com.

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

Applets

Browsers

Components

Application Development on the Web



Only One Web Application Tool Thrives in the Toughest Terrain.

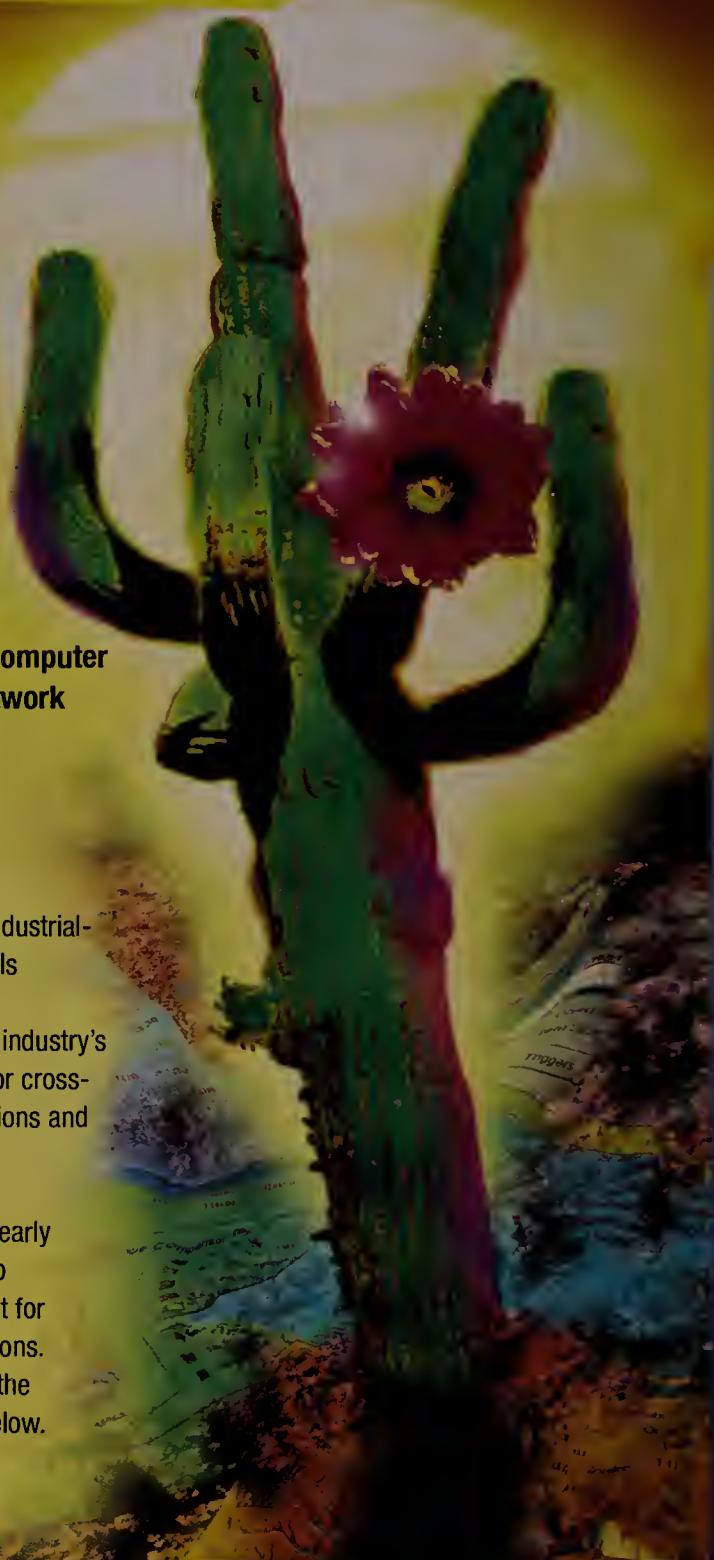
CACTUS

Most of today's Web application development tools can't handle the forbidding enterprise landscape of disparate computer platforms, database structures, security systems, and network architectures. Cactus can.

Cactus offers:

- The ability to access and update all RDBMSs as well as mainframe legacy data for true enterprise-class applications
- Easy-to-use visual 4GL workbench – requires no 3GL programming resources
- Full support for Java, ActiveX controls, and all popular scripting languages
- Choice of deployment options – client/server or Web
- Complete, integrated package...includes industrial-strength reporting tools
- Tight integration with industry's leading middleware for cross-platform communications and security

Find out why Cactus is clearly superior to any other Web development environment for enterprise-class applications. Visit our Web site or call the toll-free number listed below.



CALL THE BUILDERS

Information
Builders.

www.ibi.com
(800) 969-INFO

In Canada, call (416) 364-2760

Cactus is a trademark of Information Builders, Inc. New York, NY.

Application Development in a State of Transition . . . Thanks to the Web

A few years ago, vendors of application development tools, like everyone else, started turning their attention to the Internet. What they came up with, mostly, were products that would let corporate developers create applications that employ a Web browser as a user interface. The idea was to give developers what they wanted: the ability to let users access internal and external applications using the same interface.

So far, most companies are using these Web-enabled versions of development tools to build external and internal Web sites. "Marketing is still the most important aspect of the 'Net," says Michael Howard, vice president and general manager of the Cactus division at Information Builders Inc. (IBI), a supplier of distributed processing middleware and 4GL technology in New York City.

One reason corporations have shied away from widespread deployment of applications with Web browser interfaces is that HTML, the programming language of the Internet, takes time to learn and can be difficult to use. The products on the market "are good, but you need time to learn them," says David Strom, who heads David Strom Inc., a consulting firm in Port Washington, N.Y., that specializes in Internet-related product testing. "You need pretty hefty programming experience to do anything. You need to go the extra mile to get a useful end-user interface."

Programmers can build applications that can be accessed by a Web browser. But these applications cannot offer the flexibility and degree of control of those that are operating system-driven, and are also missing familiar items such as buttons and pull-down menus.

Although most Web-enabled development tools aren't yet robust enough to build fully functional applications, they are rapidly being improved, and their current limitations could disappear once applications incorporating Java applets and Microsoft ActiveX components hit the market.

Still, if current Web-enabled development tools are mostly being used to build external and internal Web sites, at least they're ambitious Web sites. For instance, Time Inc. is using Sapphire/Web, a tool from Bluestone Software, Inc., Mt. Laurel, N.J., to build a Web site. Starting in September, people accessing the site will have access to about one-third of the 22 million images from the publisher's pictorial database. Eventually, more of the images, including those from other Time publi-



- This supplement on Application Development on the Web was created by Computerworld Custom Publications. Reprints of this article, as well as two previous White Papers on the subject (Application Development in the Decentralized Enterprise, March, 1995, and Selecting Tools for Distributed Computing, March 1996) can be ordered through Heidi Broadley at (508) 820-8536 or heidi_broadley@cw.com.

- This supplement was authored by freelance writers Anna Fortig and Deborah Melewski and managing editor Peter Bochner.

- Cover and inside illustrations by Barton Stabler/SIS



cations such as Fortune, People and Sports Illustrated, will be added to the Web site.

Until now, access to these images was limited primarily to stock image houses and graphic artists, and they had to rely on Time researchers to identify appropriate images from descriptions of subject area. The research could take two days. However, customers visiting the new Web site will be able to access images immediately and order them via a secure credit card transaction. They can then download them, get them on diskette or have them shipped as hard-copy prints.

Time Inc. chose Sapphire/Web because it had to migrate the pictorial database application off its in-house client/server system, which is accessible only to Time employees via a corporate network. To make its deadline, Time had to migrate the application to the

Component-based development to dominate

Bill Gates has called it "the industrial revolution of software." Market research firm International Data Corp. (IDC) calls it "one of the most important phenomena in the area of software development in the decade. "It" is component software, and it will play a huge role in Web-based development.

"By the year 2000, the majority of applications will be built using components," says Eric Schurr, vice president of marketing for commercial IS products at Rational Software Corp., a Santa Clara company that develops solutions for automating component-based development. This building block approach to application development allows users to mix and match components, buying only the features they need, to create their own customized applications.

"Component-based software development will allow organizations to make good on the original promises of object technology: extensive reuse, increased productivity and higher software quality," says Steve Garone, an analyst at IDC. "For this reason, adoption of component-based development techniques will grow significantly over the next five years."

Sophisticated Web-based application development will require the use of components such as ActiveX, Java Beans, Java applets, various forms of CGI and ORBs (object request brokers). "Object-oriented, ActiveX, JavaBeans and other tools will be blended to create powerful killer applications," predicts Nick Evans, a manager with the National Internet Practice of Coopers & Lybrand LLP in Dallas.

Vendors in the application development arena are already moving to component-based architectures. For instance, Sybase has positioned its adaptive component architecture, which consists of a logic component and a data store component, around a three-tier approach. "People can develop custom applications with these components and tools, and all the components interact with one another," says Jennifer Hetrick, product marketing manager for PowerBuilder.

continued on p. 9

Tight-fistedness

Internet without extensive recoding and writing of CGI (common gateway interface) scripts, and Sapphire/Web provided native connectivity between Time's HTML pages on the front-end and its Informix DBMS on the back-end. "That made it seem more like a traditional client/server application and less like the static HTML pages that you see on many Web sites," says Rich Grasso, project consultant with Time Inc.

The Bluestone tool offered two other advantages: It let Time access JPEG images stored as non-standard data types (for example, as binary large objects, or BLOBs), and read them from anywhere in memory, and its electronic commerce capabilities allow Time to handle credit card orders.

Although Time is not using the tool corporate-wide, it plans to deploy it in other applications, such as using it to bring an entire page of a magazine — photos and text — onto the Web, says Grasso. Current versions of Time magazines on the Web are text only.

Secure payment site

R.R. Donnelley Financial, part of the R.R. Donnelley publishing company, maintains a library of 50,000 documents for use by bond traders, financial service companies and municipal governments. The Hudson, Mass., company needed to create a site that offered secure payment processing, so users could subscribe for a time or download a particular document for a fee. To build the site, Donnelley is using Cold Fusion software from Allaire Corp. in Cambridge, Mass. Cold Fusion, a tool for building Web sites that automatically generate database queries, now supports secure payment processing using technology from CyberCash Inc., a supplier of electronic funds payment systems.

Donnelley also wanted to develop the payment application quickly. "Most commerce solutions use pre-set templates that are too restrictive," says Marianne Cormier, senior systems analyst at Donnelley. "Using Cold Fusion and CyberCash, we could develop the site specific to our needs and take advantage of Cold Fusion's rapid development capabilities. The tool allows us to interact with our database and build pages on the fly."

Users can now get to documents faster. Previously, they had to sort through a list of all documents for a given state. Now they can make queries based on multiple criteria and get to the one document they want.

Donnelley also used Cold Fusion to develop a service for secure delivery, editing and proofreading of financial documents on the Web. The service is designed to shave hours or even days off the time required for revising, approving and distributing documents.



Better development tools may make for better Web sites, but they don't necessarily translate into profitable Web sites.

"It takes a lot to separate someone from their money on the Web," says David Strom, who heads his own consulting firm for testing Internet-related products. "People hesitate to buy things they can't feel or to do business with a company they don't know."

Another problem is that many potential customers are precluded from ordering goods electronically because they use old versions of browsers such as Mosaic, which may not be able to interface with a newly created site.

However, some observers predict that Web access to legacy systems will help make electronic commerce a reality because they will be able to tie in a company's corporate financial systems.

NetExpress Technical White Paper

Internet Solutions For Business Applications

Executive Briefing

It takes a special skill to create industrial-strength applications. It requires developers to have a strong "technical" understanding of how mission critical systems are designed, developed and maintained along with a detailed understanding of a company's business processes. COBOL programmers have historically been able to merge these two skill-sets and have successfully developed and maintained many of the mainframe systems that businesses depend on throughout the world. Today, business systems are no longer restricted to the mainframe. The Internet, intranets and the world wide web have opened up a new world of opportunities to collect and provide access to information. But even with all this new technology, the basic skills necessary to develop and maintain mission-critical business systems remain the same. That's why Micro Focus has developed a programming environment that will enable COBOL programmers to exploit the Internet. The tools and technology discussed in this Executive Briefing will allow COBOL developers to use their existing skills to produce new systems or extend existing applications to harness the Internet and bring added value to any business.

Overview

Creating industrial-strength applications for the Internet requires the smooth integration of many technologies and skill sets. In the case of business applications, this typically means reusing existing business rules and data and enabling them for the Internet or intranet. The business rules are almost always written in COBOL.

Micro Focus has developed NetExpress to focus on providing COBOL programmers with a complete solution for "Bringing Business Applications to the Internet." NetExpress is a unique application development environment that builds on Micro Focus' traditional strengths in providing robust application development tools. NetExpress also includes exciting new features that will make it the best-of-breed tool for developing and deploying Internet-based applications.

Below are descriptions of some of the technology NetExpress brings to COBOL developers.

Extending COBOL to the Internet and Beyond

Micro Focus has added powerful extensions to the COBOL language that allows programmers to easily migrate existing applications to a web-based user interface. In addition, technologies built into NetExpress minimize the effort necessary for COBOL programmers to:

- Create new HTML pages
- Use ActiveX controls on HTML pages
- Automatically generate the server-side (CGI) code for new and existing applications
- Debug web-based applications

- Make use of the performance of Netscape NSAPI interfaces without writing CGI application code
- Use Microsoft®'s Transaction processing applications
- Scale to UNIX servers.

Technology Highlights

NetExpress includes an "External Language" extension to the COBOL language to enable a program to a simple extension means that displaying forms from these forms is as easy as using syntax familiar to COBOL programmers do not need to know can be rearranged without having to change the source code.

NetExpress also allows a program to generate pages when the program is executed. This uses the new EXEC HTML statement to construct constructs to be included in a COBOL program. The flexibility of server-side scripting will add performance and ease-of-use COBOL programmers.

Integrated Form Painting

The HTML/ActiveX form painter, Form Designer, included in NetExpress, gives developers the ability to design forms for an application. When used in conjunction with the outlined below, Form Designer gives programmers creating the appropriate forms and controls to have an application become functional. The output can be used by any web site or a chosen web site when required.

Once the forms have been painted, the developer can connect controls together and create logic for the form. This is done using a point-and-click interface that automatically generates the appropriate code. Basic processing can be done on the client side without requiring a round-trip to the server.

CGI, ISAPI and NSAPI Programming

Unlike other languages, writing a server-side application in COBOL is easy. If the higher performance Microsoft (ISAPI) API is needed, a single directive. Applications created with NetExpress run on the majority of UNIX platforms using the NetExpress Development Suite for UNIX.

ded by the Microsoft ISAPI and
t any source code changes to a

r™ to easily create transaction

" extension to the COBOL
or display HTML forms. This
HTML forms and accepting data
normal ACCEPT and DISPLAY
rs. This approach means that
ML and that the layout of forms
compile the application.

o dynamically create HTML
using Embedded HTML. This
to allow standard HTML
application. This delivers all the
he traditional power, compiled
provides.

m Designer, integrated into
sary tools to paint business forms
nction with some of the features
rogrammers a head-start in
er-side COBOL code required
al in minutes. Form Designer's
horing tool for incorporation into

m Designer can be used to
ent handlers for controls on the
ick user interface which auto-
nScript code. This means that
ent machine in the browser
erver.

Made Easy

program with Micro Focus
nce of the Netscape (NSAPI) or
s simple as changing a compiler
tExpress can be hosted on the
Micro Focus COBOL

By using Form Designer to design the appropriate input and output forms, users can define the COBOL format of any field on the HTML forms. A code generator is then automatically invoked and produces:

- Working-Storage definition of the fields
- EXEC HTML code to display the fields
- ACCEPT statements to retrieve data from the input fields.

You can have a working application within minutes that can be further refined with customer input.

Web Debugging Facilities

NetExpress provides an integrated web server for the programmer's personal machine. This allows programmers to work even while a production web server is not available to them. NetExpress also provides programmers with a unique "just-in-time" debugging environment for locating and correcting errors in web programs.

Tools for Migrating Existing COBOL Programs to the Internet

NetExpress' Form Express tool allows programmers to automatically generate a form, data conversion code and a CGI program based on a COBOL program's linkage-section. This user friendly, point-and-click utility allows developers to easily select the types of control that should be generated for each linkage-section item. With this tool, an existing application can be up and running with a browser interface in minutes.

Support for Microsoft Transaction Server

Microsoft Transaction Server is a component-based transaction processing system for Windows NT. Micro Focus' support for Transaction Server allows COBOL programmers to build scaleable servers using ActiveX technology. The integration of Microsoft Transaction Server and Micro Focus NetExpress means that COBOL programmers can leverage their skills and training to participate in the software component revolution that is taking place on the Internet.

Keeping Developers in sync with WebSync

Micro Focus has launched a revolutionary technical assistance site called WebSync. This site houses samples, technical papers, handy utilities, fixes and any other materials helpful to our users. The site will automatically e-mail registered users with regard to any changes in the content. An offline version is also available. WebSync is completely integrated into the NetExpress development environment.

Availability

NetExpress is generally available. Please contact Micro Focus sales offices or call 1-800-87-COBOL. Additional information can be found at the Micro Focus web site <http://www.microfocus.com/NetExpress>.



Multiplicity

Observers predict that Web-based application development is going to get easier. But first, it may get harder.

For many developers working on the 'Net, the key challenge is the multiplicity of vendors they must deal with, according to Igor Kruglyak of Micro Focus. The maze created by the many configurations of systems, platforms, databases and client browsers is a problem that must be addressed during development. "The ability to diagnose and fix problems associated with vendor interactions will have to be provided for," he says.

Says Michael Howard of Information Builders, "The number of technologies a consultant must master has increased threefold. Java applets, Javascript, various forms of CGI

"If you think about the pressure a Global 500 corporation has in terms of using the 'Net as a business vehicle, figuring out how they'll take current personnel and building complete applications in a timely period, it's an impossible situation," he notes.

Host access

Although many companies currently deploy mission-critical applications to the Intranet, few have brought their core applications to the Web. But that is starting to happen, according to Nick Evans, a manager with the National Internet Practice of Coopers & Lybrand LLP in Dallas. This year, he says, "there will be a lot more serious business-to-business applications using Internet technology that is beyond just a Web site." Or as Lew Tucker, director of ISV and developer relations for JavaSoft puts it, "We're now in the era of the transformation of the Web from publishing medium to one of application deployment."

For that transformation to take place, Web developers are going to require host access, since 70% of all the "useful" data in the world still resides on host computers. And that will happen, because many observers say the next trend in Internet application development will be using a Web browser to access legacy applications.

But there will be problems. "Core applications are traditionally client/server applications, and fall within the realm of the IT department," says Jennifer Hetrick, PowerBuilder product marketing manager at Sybase. "Most Web servers were set up by marketing people for distributing marketing information." As the page-oriented Web comes together with the transaction-oriented applications within a business, it is going to make sense to integrate the Web server with application logic. But, she notes, "developers aren't always sure how to get to Web clients quickly and easily."

Companies are working on the problem by coming up with products that give Web developers flexible access to host data without compromising the host environment, as well as products that allow developers to recreate host applications for the Web.

Last year, IBI unveiled its Cactus client/server development system, which lets developers connect mainframe applications with servers, user desktops and even the Web. The consensus view is that it's impossible to build mission-critical applications on the Web today, because HTTP protocols and servers are neither robust nor scalable enough. But according to IBI's Howard, "it depends on your definition of mission-critical. Today you can still do very important types of applications that need to be up 24 x 7 and have very good performance."

Another solution, from Intelligent Environments Inc., involves a version of the Burlington, Mass., firm's Amazon tool to Java developers so they can build Web applications that link legacy systems. Using Amazon, developers will be able to create applications using



Point and click

legacy data from Unix, AS/400 and IBM mainframe systems. They also will be able to publish an organization's business rules corporate-wide using JavaBeans.

When it comes to moving legacy applications to the 'Net, data access will be a crucial component, according to Igor Kruglyak, marketing product manager for the distributed computing team at Micro Focus, a supplier of software tools based in Palo Alto. "The essential component [of data access] will be middleware enablement," he says. To facilitate data access, Micro Focus has implemented OpenESQL, which allows embedded SQL components to access a variety of databases via ODBC against different code bases.

When it comes to application development on the Web, Micro Focus has two credos.

1) Any Cobol developer should be able to develop and deploy for the Internet. 2) Any component that a developer is not familiar with should be generated automatically.

To fulfill this vision, Micro Focus offers NetExpress, an integrated development environment for creating distributed applications. NetExpress combines the company's Object Cobol compiler with a set of tools for developing applications targeted at graphical PC workstations, distributed computing environments and the Internet.

Says Kruglyak, "The developer does not have to know about the Internet because

How soon will Java applet development be comparable to the point-and-click paradigm of, say, Visual Basic? "Very, very soon," says Lew Tucker of JavaSoft. "We're already seeing new products from companies like Random Noise that allows Web developers to use point-and-click to construct Web pages."

Components continued from p.4

According to Hetrick, PowerBuilder 6.0, which is about to go into beta, will also allow multiple component types to be built for the middle tier. "There's a lot of interest in seeing a Java component on the middle tier," she adds.

IBI also employs a component-based philosophy in its Cactus application development product. To enable applications to be distributed and redistributed to run where required, the Cactus architecture divides applications into three logical components: presentation, business logic and data access. In this three-tier scenario, business logic is moved off the desktop to a server, where enhancements can be made easily in one place, instead of across hundreds of individual workstations.

As the use of components increases, the process of application development will also be changed. "Components are critical for enabling the rapid application assembly model of the future," says Lew Tucker of JavaSoft. In the rapid application assembly paradigms on the horizon, "application development will consist of several teams working together, some writing code and some doing assembly," he notes.

According to Tucker, a large number of components will be available for Java. These components will be used with drag-and-drop IDEs (integrated development environments) to construct an application. As a result, he says, "A lot more non-programmers will be able to construct the application."

Metamorphosis

The Internet will have a major impact on applications. "The very definition of an application will dramatically change," says Michael Howard of IBI.

The applications of tomorrow will have to do more than today's typical business applications. "They will have to create loyalty, to create collaboration with customers, to provide a new way for companies to interact with their customers." Such new capabilities are being demonstrated in applications such as help desk and customer service, applications that involve not only access to data but access to people as well.

In fact, according to Lew Tucker of JavaSoft, applications are becoming services. "We will think less and less of buying a shrink-wrapped application and more about subscribing to a particular service in which we will get an application," he says. Instead of building a presentation application, Tucker says it could be more productive to turn to a "one-stop shop firm" that offers all the services involved in creating a presentation, including finding a graphics artist, making the copies, and sending them to the city where the presentation will be made.

NetExpress creates a CGI program in Cobol that can also interface with the customer's existing business logic. This gives developers the option of developing new Internet applications or bringing existing legacy applications to the Internet."

Development options growing

In the next two years, as activity in the development arena shifts towards the creation of applets that can execute on clients, as well as browsers for database reading and writing, for linking to corporate application servers and for allowing transaction-based applications, developers will find themselves juggling more and more technology options.

For many developers, one of their main options is Java. Since its introduction, Java has blossomed from a Web development tool into a full-fledged programming language — one particularly attractive to applications developers because its cross-platform capabilities, database connectivity and component architecture allows them to write real applications that are downloaded on a Web page. Developers adore Java's cross-platform capabilities, since it cuts their development time significantly.



However, one drawback is that not every Web browser on the market supports the same version of Java, making them incompatible. "Not enough browsers support Java, and those that do don't support all of Java's functions now," says consultant Strom. He recommends that users to settle on a particular version of one browser and use that as a base to build application interfaces.

Nearly every vendor is formulating a Java strategy; a few are making it the crux of their development strategies. More typical, however, is Sybase, whose Powersoft division offers products for whatever platform a developer is comfortable with, be that C++ or Java. Its PowerJ product, for Java applet and application development, is now in beta.

Less typical is Micro Focus. Because its Web strategy is server-centric, the company currently has no plans to provide Java tools. "Java is a hot language for the client side," says Kruglyak. "For our purposes, though, we have provided mixed language support and HTML." The company also offers Cobol as a server-side scripting language for the Internet, so that HTML and Cobol can be deployed as one unit.

Other companies are figuring out how much weight to throw behind Java and ActiveX. Although some companies have aligned themselves behind either Microsoft or Sun, the idea, says IBI's Howard, is "to keep in both camps as best you can."

Paradigm shift
Information super corridor
Unlimited marketplace
Political independence

Have you Web-enabled your enterprise applications?



To be informed about the immense opportunities on the Web is one thing. To be Web-enabled as an organization is another. How you go about adapting your organization's systems to the Web is critical. What you need is a powerful strategy that will extend and empower your organization like never before.

Presenting Websétu. To integrate your systems with the Web and provide real time enterprise-wide connectivity without expensive reengineering. With Websétu, you can develop and maintain extensible Web applications in a secure environment supporting multiple protocols. It facilitates connectivity between and integration across application layers. It offers scalability, performance, and customizability. With Websétu, OLTP and OLAP data can be extended to your customers over the Web, over and above the traditional delivery channels.

Complete Solutions Support: Infosys provides optional services for Websétu. An experienced team analyzes, designs and develops applications with Websétu and integrates them into your existing enterprise and legacy systems.

Websétu

To Web-enable enterprise and legacy applications

For more information, please contact:

Infosys Technologies Limited

1000 Corporate Park Drive, Suite 102 Fremont CA 94538

Toll free tel: 1 888 INFO LTD
Fax: (510) 770 9469 Toll free tel: 1 888 INFO LTD

E-mail: lu@inf.com

On the Web: <http://www.inf.com>

34,722 hpm*



*Hits per Minute.

Fueled by Solaris software for web servers.

There's power, and then there's reliable power. Recently, a web site powered by Solaris™ software for web servers took 34,722 hits per minute...well over 2,000,000 hits each hour for a full 24 hours.* Look deeper into our operating environment and you'll find TCP/IP at its core—built to run your Internet applications on both the Intel and SPARC™ platforms. That's why Solaris is the choice of leading ISPs and has the largest installed base of any web server operating system.* For more information contact us at <http://www.sun.com/solaris> or 1-800-SUNSOFT.

Develop, deploy and manage with WorkShop™, Solaris™ and Solstice™ software. **THE NETWORK IS THE COMPUTER™**



Software

Client/Server • Development • Operating Systems

Briefs

Broadbase data marts

Broadbase Information Systems, Inc. in San Mateo, Calif., this week will announce plans to deliver an integrated set of software for building, managing and querying Windows NT-based data marts. The Broadbase Server is scheduled to ship in the third quarter and targets departments and medium-size companies. Pricing wasn't available.

Tactica middleware

Tactica Corp. in Portland, Ore., this week will introduce a release of its Capriera distributed transaction middleware with expanded Unix support. Version 2.3 runs on Hewlett-Packard Co. and Sun Microsystems, Inc. servers. It already supports Windows NT and IBM Unix boxes. Shipments are scheduled for August.

Alpha Year 2000 tool

Digital Equipment Corp. and Irish firm Piercom Ltd. have entered into an agreement in which Digital will use the Piercom2000 automated year 2000 readiness tool on Digital systems. The tool will help Digital reduce the cost of analyzing and converting customers' application programs for year 2000 compliance. The Piercom2000 Digital Tool Suite will run on Digital's Alpha systems under Digital Unix.

All the data that fits

Worldwide storage capacity of nonmainframe databases

1996

Unix servers: 155P bytes
PC servers: 6P bytes

1997*

Unix servers: 277P bytes
PC servers: 14P bytes

1998*

Unix servers: 450P bytes
PC servers: 46P bytes

(1 petabyte = 1,000T bytes)

*Projected

Base: 288 North American user sites with a combined total of 2,861 database servers

Source: Strategic Research Corp., Santa Barbara, Calif.

IBM plan builds on Java

Virtual machine may boost Java acceptance

By Sharon Gaudin

USERS AND ANALYSTS said IBM's new Universal Virtual Machine (UVM) should increase the number of developers who use Java rather than detract from the 2-year-old development language.

IBM officials confirmed earlier this month that the company is designing a UVM that will let developers use languages other than Java to build platform-independent applications. UVM, which is expected in beta this fall, will let users of IBM's VisualAge development

IBM'S UNIVERSAL VIRTUAL MACHINE

- Based on Java technology, with JavaBeans as the component model
- Designed to run Java, Smalltalk and Basic
- Engineers are considering supporting Cobol and C++
- 18-month rollout period starts in the fall

tools for Java, Basic and Smalltalk write applications that run on multiple platforms [CW, June 16].

This is the first time that Java, which gained its market momentum because of its cross-platform capabilities, will have company in that arena. But sev-

eral users and analysts said giving Java a little company will only make it more popular.

Jean-Pierre Cabanier, computer support manager at Philips Microwave, a division of Philips Semiconductors in Limeil, France, said he can't satisfy all

Java, page 62

Users see limits of Web data tools

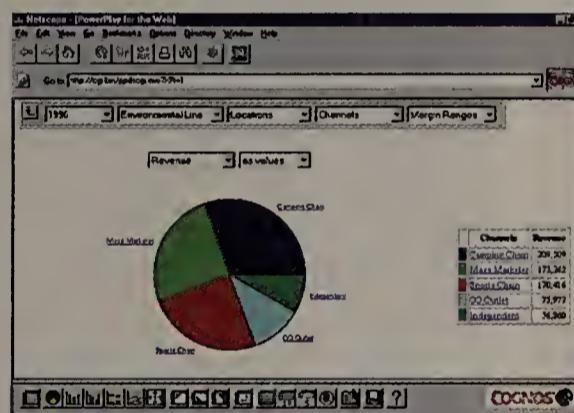
By Craig Stedman

NEW WEB-BASED versions of desktop data analysis tools should make it less painful to extend them to distributed users. But they can't completely replace the full PC client releases at this point.

Archivists Cognos, Inc. and Business Objects S.A. are leaving some key capabilities out of their first products that let users run query and analysis applications from World Wide Web browsers. As a result, even early adopters of the server-based tools plan to keep using the desktop versions as well.

For example, the Naval Center for Cost Analysis plans to use Business Objects' Web Intelligence software to

more than double its 200-user installation of the company's tools. The server-based approach "just eliminates all the requirements" for loading and supporting software at each PC, said Commander William Mickler, decision-support program manager at the U.S. Navy unit in Arlington, Va.



Cognos' PowerPlay Web Server Edition provides about 80% of the analysis and reporting features of the original desktop version

But for now, a lack of charting and drill-down capabilities in WebIntelligence will keep the center from replacing the more feature-rich desktop clients that current Business Objects users rely on. "Once people start learning to use something, you can't take it away," Mickler said.

Users, page 63

Organizer stands alone, works with others

By Lisa Picarille

ATTEMPTING TO compete in the Microsoft Office-dominated suite market, Lotus Development Corp. last week delivered a revamped information management application that offers group calendaring and scheduling.

The Organizer 97 GS program is an updated version of Lotus' personal information manager, which lets users schedule appointments, manage and track to-do lists, maintain address lists and manage contacts. New features include facilities to create links to World Wide Web sites and a

combined calendar view that lets users view up to 15 calendars simultaneously for collaborative management of schedules.

Observers said Organizer 97 GS is a direct response to Microsoft Corp.'s desktop information management product, Outlook,

Organizer, page 63

OPERATING SYSTEMS

Sun offers Solaris cafeteria

By Jaikumar Vijayan

CALL IT operating system a la carte.

Users of Sun Microsystems, Inc.'s Solaris software soon will be able to pick and choose only the features they need for their application environments because of a new modular delivery strategy for the operating system.

The recently announced Solaris 2.6 will serve as a foundation platform for the new strategy. Over the next few months, Mountain View, Calif.-based Sun will deliver a range of market-specific modules, or "feature sets," that users can add to the baseline platform to make it customized to their environments.

The idea is to let users pay only for the features they use and only when they need them.

For example, on the server side, Sun is developing an intranet application module, a module for Internet service providers and another module for enterprise-class shops. A Power Desktop feature set that in-

Solaris, page 62

Sun's Solaris road map:

Second half 1997

- Web-based management
- Web-based documentation
- 64-bit file support
- Cluster application catalog
- Intranet feature set
- Enterprise feature set

1998

- Native Java platform
- Full 64-bit applications
- Unlimited Internet address support
- Single system image
- Internet service provider feature set

Java

CONTINUED FROM PAGE 61

the needs of his users with one development language.

"I need VisualAge for Basic to write applications that allow me to process in my DB2 [database] server. I cannot use Java for everything. I may be able to use Java for part and Basic for another part. If I can write cross-platform with Basic, too, then I could use both," Cabanis said.

A virtual machine helps translate an application's language into code that an operating system can understand. Sun Microsystems, Inc.'s Java Virtual Machine translates Java code into a language understood by various operating systems.

UVM is being designed to translate Smalltalk, Basic and Java coding to support six operating systems: IBM's AIX and OS/2, Sun's Solaris, Hewlett-Packard Co.'s HP-UX and Microsoft Corp.'s Windows NT and Windows 95.

Robert LeBlanc, director of IBM's Toronto laboratory, said the company is

building its virtual machine using Java technology.

LeBlanc said UVM will support JavaBeans, a Java-based architecture that enables Java applets and other components to communicate with one another.

LeBlanc said UVM is "building on what Java has brought to the market. We're trying to enable customers to integrate what they've written in Smalltalk or Basic with Java."

Joseph Feiman, manager of advanced technology at American Greetings, Inc. in Cleveland, said having one virtual machine that can handle different languages will enable his Java developers to work more closely with his other developers.

"Now I'll have to have a team of Smalltalk programmers and a team writing Java, and they're working together. Without this UVM, they would not be able to

do that easily," Feiman said.

Karen Boucher, director of The Standish Group International, Inc. in Dennis, Mass., said UVM is "probably the first of many introductions that will expand on the concept of Java and the independence of write-once and run-anywhere."

"If you can take the best parts of Java and expand on that and make it accessible to more people, it helps the whole cross-platform push," she said. □

Solaris

CONTINUED FROM PAGE 61

cludes a built-in World Wide Web browser and high-availability support will be available with Solaris 2.6 in August.

"It is a great approach. You can custom build your operating system environment this way," said David Rae, a systems architect at Norwest Mortgage, Inc. in Des Moines, Iowa.

"Before, you had to buy the entire thing whether you wanted everything on it or not. Now you can buy components. That could make things cheaper," said Chris York, a technology manager at The Chase Manhattan Bank Corp. in New York. Both companies are beta users of Solaris 2.6.

As part of its new delivery and packaging scheme, Sun is introducing a two-year subscription-based pricing plan for Solaris. Under the plan, users will pay a subscription charge up front and will get all upgrades and patches automatically during the next two years.

For example, users who become subscribers under the new plan will automatically get upgraded to Solaris 2.6 when it becomes available in August, Sun officials said.

Subscriptions start at \$129 per desktop. On the server side, Sun is charging \$695 for servers with an unlimited number of users under an introductory offer that expires June 30.

"We basically wanted to get away from the 'one size fits all' approach to delivering operating systems," said a Sun spokesman.

Sun officials didn't say how much the custom modules will cost, but they said users will have to pay separately for each module as it becomes available. □

For MORE network BANDWIDTH, THINK Inside the

Organizer

CONTINUED FROM PAGE 61

which shipped with Office 97 in January.

But unlike Outlook, which requires Office 97 to use and Microsoft Exchange to get workgroup and messaging benefits, Organizer 97 GS will be available as a stand-alone product. It also will come as

part of Lotus' SmartSuite group of productivity applications.

As a stand-alone application, Organizer supports VCard and VCalendar, the Internet Mail Consortium's standards for electronic business cards and appointments.

Organizer 97 GS also can be deployed as an enterprise application. By storing its data in the mail file of Notes 4.5, Organizer 97 GS uses the group scheduling

and mobile support of the Domino Server to let users schedule meetings interactively with Organizer 2.x, Notes 4.5 and other Organizer 97 GS users from within the Organizer interface.

Adam Slagle, an Organizer 97 GS beta tester, said he liked the product's flexibility. "Now we can use a variety of front ends to the same calendaring and scheduling system," said Slagle, a senior consultant at Norcross, Ga.-based GE Capital

IT Solutions, a division of General Electric Co. "Users can pick whatever front end, Organizer or Notes, they feel more comfortable using, which makes it easier to get everyone to use the system," he said.

Organizer 97 GS costs \$79. Registered Organizer 97 users can upgrade to Organizer 97 GS for a \$15 shipping and handling charge. Users of versions 1.x and 2.x can upgrade for \$49. □

SOFTWARE

Fibre Channel
SCSI
Fast Ethernet
FireWire
RAID

In their ongoing effort to beef up bandwidth throughout their organizations, a few savvy IS professionals are beginning to rethink their long-held views about the problem, and where the solutions lie. Bandwidth isn't just the size of the pipe between the sites. It isn't just the throughput running between servers and workstations on the LAN. Bandwidth is also inside the box. It's the performance of all those systems attached to the LAN.

Think of it as "System Bandwidth."

When you think about it, your LAN has more systems attached to it than it has anything else. So, the surest way to boost bandwidth across the enterprise, is to increase system bandwidth — inside the box. Enterprise throughput problems also occur inside workstations and servers. The CPU, memory, I/O bus, adapters, and storage subsystems each play a crucial role. If they're not properly tuned with each other and with the network, the enterprise slows down. So, maximizing the bandwidth of individual systems is vital to maximizing enterprise bandwidth.

Adaptec's business has always been about improving system bandwidth.

Finding new ways to move data faster and making it easier to manage.

Our expertise in both inside-the-box performance and network connectivity enables us to provide solutions that improve performance. Enterprise-wide performance. From SCSI, Fibre Channel, and RAID cards to ATM and Fast Ethernet server NICs, we're improving system performance throughout your enterprise. And we're tuning systems specifically for high-speed network environments. We're moving the information from memory to storage and from the server through the network to the desktop.

"Don't get stuck with the way you think things are at the time."

James Burke,
Host of PBS's "Connections"
From his article in last month's *Bandwidth Magazine*

System Bandwidth is summed up nicely in James Burke's discussion of the evolution of technology, in *Bandwidth*, the server-centric magazine for industry standard enterprise computing. For a free copy or back issue of *Bandwidth*, just visit our web site at:

www.adaptec.com/bandwidth

Read about how leading IS professionals are increasing enterprise bandwidth by addressing the issue at a system level. And while you're there, start thinking inside the box.

Cognos and Business Objects split about 70% of the desktop decision-support market between them, according to The Yankee Group in Boston.

Meanwhile, Cognos left out of the Web version of its PowerPlay OLAP tool the ability to build new calculations on the fly and other advanced features. That tool is being released this month on Windows NT. The Ottawa-based company also doesn't plan to have its companion Impromptu query tool ready for the Web until late this year.

Zurich Insurance Co., the U.S. subsidiary of Switzerland-based Zurich Group, plans to use WebIntelligence to make risk-management reports available to 500 field workers and customers. Reports that now go out on tapes with month-old information will be posted online and updated daily, said Frank Colletti, systems manager of the national accounts division at the Schaumburg, Ill., company.

But the 25 users who create reports and do heavy-duty analysis with Business Objects' namesake desktop software will likely stick with that for performance and data slicing-and-dicing reasons. "I have a feeling there are always going to be fat-client users here," Colletti said. □

BOX.

We Move The Information That Moves Your World.™

adaptec

Now
Web Enabled

SAS

Institute.

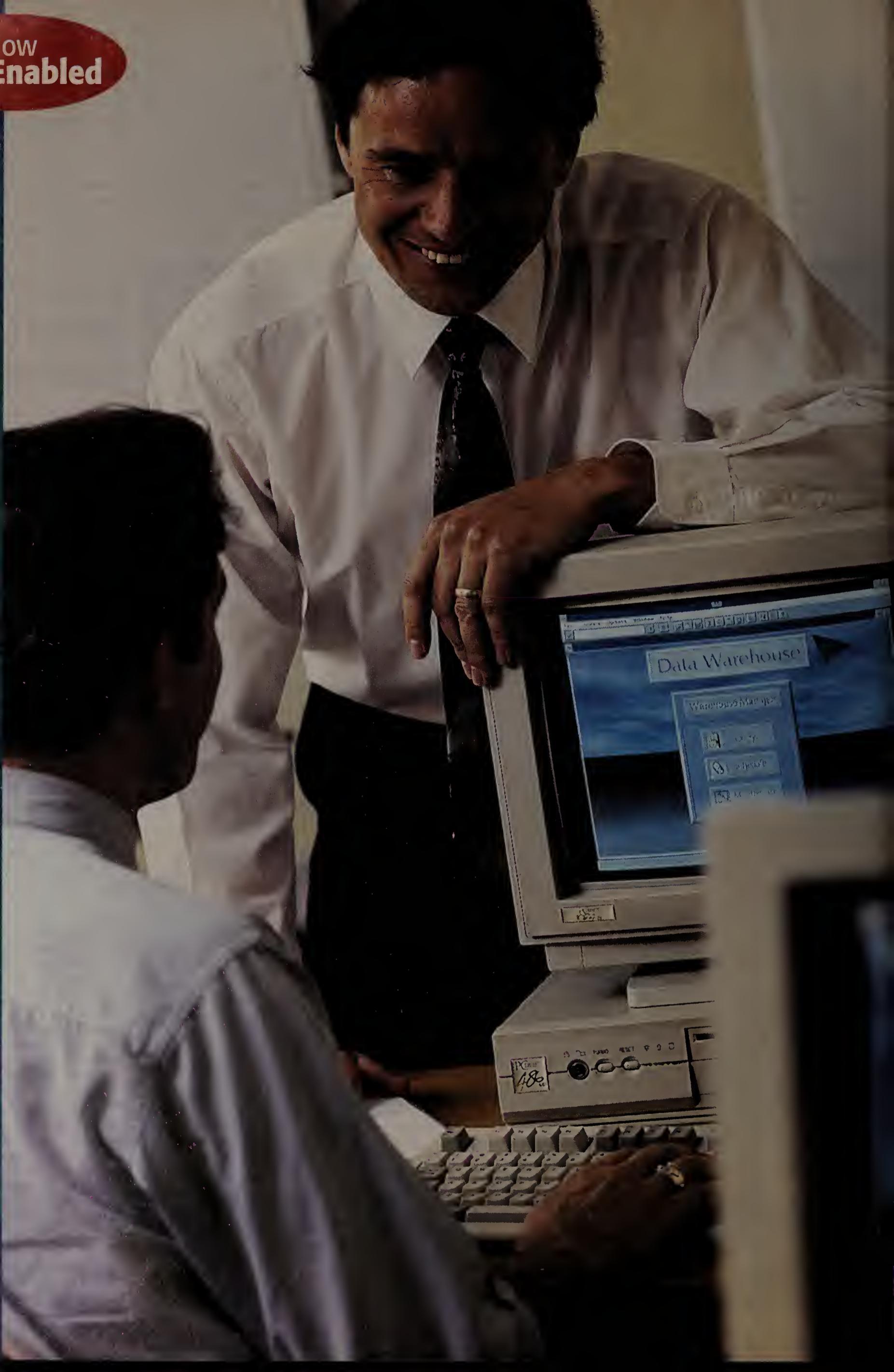
Software

for

Successful

Decision

Making.



FREE for a Limited Time...A CD ROM Preview of

The Top New Data Warehousing Software



As the only end-to-end solution for rapid data warehousing, SAS software delivers everything you need to manage, organize, and exploit your business data. The tools you use

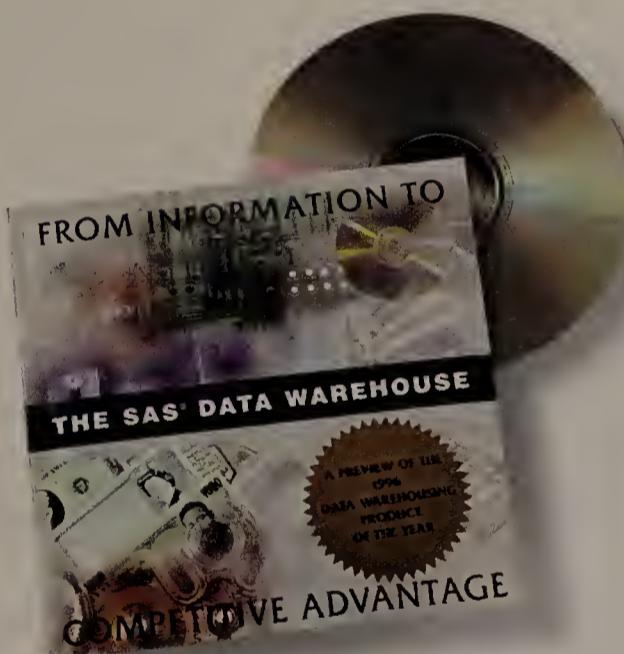
to build a data warehouse are the same ones used to maintain it... run it...and change it. And what's more, everything's scalable. Jump right into enterprise-wide information delivery applications...or start small and build on your success.

SAS software doesn't consume overhead for database features you don't need. And once you have data in the warehouse, you'll find everything you need for data query and reporting, OLAP/multi-dimensional analysis, data mining, database marketing, data visualization, and much more. It's never been easier to access your data...or to arrive at informed decisions by turning raw data into real information.

When 200,000 IS managers were asked to choose the top software for data warehousing,

their answer had a familiar ring:

SAS® software from SAS Institute.



SAS
SAS Institute

Software for Successful Decision Making

Phone 919.677.8200 Fax 919.677.4444
In Canada 1.800.363.8397

You can also request your free CD ROM, and learn more about SAS seminars in your area, by visiting us on the World Wide Web at <http://www.sas.com/>

E-mail: cw@sas.com

Monkey on your back #34: How to find the vendor with more Microsoft® Exchange experience than anybody. Anybody.



**DIGITAL now has over
1,000,000 seats for
Microsoft Exchange
under contract.**

An impressive number, for sure, but more important, made possible by DIGITAL's real-world Windows NT® solutions implementation experience. Plus a broad alliance with Microsoft that's built on a relationship that's over a decade long. DIGITAL has been close to Windows NT since its very inception, and is leading the way in 64-bit computing for the next generation of Windows NT. We currently offer the industry's most extensive line of Windows NT hardware, software and solutions, across both Intel® and Alpha™ platforms. But what matters most in a large Exchange rollout is making it all work. DIGITAL has more trained and certified Windows NT experts than any other Microsoft partner. All of which goes to show, when it comes to

Microsoft digital™
ALLIANCE
FOR ENTERPRISE COMPUTING

Microsoft Exchange
and Windows NT, nobody has more experience than DIGITAL. Nobody. **For more information, call 1-800-DIGITAL, or visit www.alliance.digital.com.**

© Digital Equipment Corporation, 1997. DIGITAL, the DIGITAL logo, and Alpha are trademarks of Digital Equipment Corporation. Intel is a registered trademark of the Intel Corporation. Microsoft and Windows NT are registered trademarks of Microsoft in the U.S. and other countries.

Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Hitachi's Merced plans

Hitachi Ltd. aims to be among the first supporters of Intel Corp.'s next-generation CPU — code-named Merced — by shipping a server based on the 64-bit hybrid, a company spokeswoman said. The IA-64 Merced is a high-performance CPU that merges complex instruction set computing and RISC technologies into one processor.

Servers based on the chip, which Intel is developing with Hewlett-Packard Co., will support Unix and Windows NT operating systems. Hitachi expects to ship a system with the first release of Merced, which is scheduled to be launched in 1999.

Timberwolf for PCs

Storage Technology Corp. last week announced a new model of its Timberwolf tape storage systems for PC LANs. The 9730, which will ship this summer, will hold up to 2.1T bytes of compressed data and will cost up to \$30,000 for a 30-cartridge system.

StorageTek, in Louisville, Colo., is the leader in high-end tape storage systems and robotics.

RAID revenue rises

Revenue for all types of redundant array storage systems should hit about \$15 billion this year, up from \$10 billion in 1995, according to Strategic Research Corp. in Santa Barbara, Calif. Total RAID revenue could approach \$25 billion in 2000, the consulting firm said. The largest growth in revenue will come from high-performance RAID systems, followed by midrange systems and PCs.

UNTAMED UNIX

Q1 1997 worldwide workstation shipments by operating system

Unix	195,442
Windows NT	61,384
Proprietary	2,786
Total	259,612

Source: Dataquest, San Jose, Calif.

'You can't have that'

► Managers battle users who want new gadgets

By April Jacobs

WEARY DESKTOP IS managers not only have to manage more technology than ever, but also must fight off users who think they need every new gadget.

Adding to the usual plethora of desktop configurations — with all the bells and whistles — are new systems, many of which were designed to reduce the cost of owning PCs and increase productivity.

They include the NetPC, a locked-down PC minus a floppy disk drive or CD-ROM drive; handheld computers; and network computers, desktops that look like PCs but do all their application work from servers.

USERS' REQUESTS

Vincent Malitto, manager of information technology architecture at Praxair Chemicals, Inc. in Danbury, Conn., said keeping track of the devices and technology hitting the market isn't his biggest worry.

More the problem, he said, is explaining to users that not every new device is necessary.

IS managers face an array of choices for end-user devices

Device	Function
Handheld computers	For mobile users to access E-mail, calendaring and limited network connectivity.
Personal workstations	For high-end graphics and power users, including engineers and financial types.
NetPCs	For users running a few applications. Provides tighter security than PCs because the box is locked down to prevent users from adding software.
Network computers	For former terminal users, limited task users or users of Internet/intranet applications. Server-centric network computers are low-cost boxes that access data at the server level and allow for central management of applications.

"They see these announcements, and they say, 'I want that!' We have to explain to them, 'Yes, it's cute, but the keyboard is too small for your fingers or it doesn't have enough memory...' It's hard to get that message through to the users sometimes," Malitto said.

"We've had several hundred requests for handhelds," said Dave Quady, a senior systems engineer at Norwest Corp., a mortgage and financial services

company based in Minneapolis. "But we can only give those people limited support, so we have to rely on the vendors for those people much more."

Quady said he has been looking at NetPCs, but he has also received pitches for network computers and personal workstations aimed at engineering and higher-end financial applications.

That is a new business area
Managers protect, page 68

Removable storage devices have design group Jaz-zed up

By Matt Hamblen
SAN FRANCISCO

IT'S HARD FOR the artists and designers at fast-paced Landor Associates to imagine how they would work without the flexibility of removable desktop storage devices.

It takes months of research, analysis and computer-aided design to develop a name and logo for a global client such as Lucent Technologies, Inc. Most jobs require constant communication between the artist and the client. And the creative teams often produce several drafts of artwork for a package cover or corporate sign before a winning design comes to life.

"We have demanding users, and that's not a negative," said

Mike Parkinson, worldwide director of technology at Landor.

And those users face demanding deadlines, which require efficient, reliable storage

and backup that they can control at their desktops, said Rob Pompon, a technology specialist at Landor. "We typically have several emergencies a day," he said, including PCs that crash for a variety of reasons.

To help reduce information systems headaches and satisfy his users, Pompon recently stan-

Storage devices, page 68



Landor Associates' Rob Pompon:

Using a standard removable hard drive means a help desk worker can bypass a troublesome Macintosh or PC

COST SAVINGS

Small mainframes make big impact

By Tim Ouellette

MAINFRAME VENDORS are cranking up the high ends of their lines, but some users think smaller is better.

Users testing a new breed of "small mainframes" from IBM and Commercial Data Servers, Inc. (CDS) said they are a great option for efforts such as year 2000 testing, application development or retaining a mainframe presence in a shop that is moving to distributed servers.

TRADE-OFF

The systems pack a fraction of the MIPS capacity of regular mainframes, but they avoid the high software prices and maintenance issues attached to the larger machines.

For example, Rory Dowler, supervisor of MIS operations at Ottawa Hydro, wants to get off his aging IBM 4381-91E mainframe to prepare properly for the year 2000.

But he said moving to a used machine or Unix server wasn't the answer because maintenance and labor costs would have been much higher.

"We have a date with the year 2000 that we can't break," Dowler said. "I can't afford not to go to [IBM's] Multiprise, because the alternative is too expensive."

Analysts have given the machines high marks for extending the breadth of the S/390 mainframe line and giving users more choice in how to allocate mainframe resources.

Last year, users searching for mainframe power in a small, affordable package would have

—Rory Dowler,
Ottawa Hydro

"We have a date with the year 2000 that we can't break."

Small mainframes make a big impact

CONTINUED FROM PAGE 67

been pointed toward traditional mainframes and told to deal with the extra capacity — or buy a used system.

But there are more options today. IBM recently added new models and features to its Multiprise 2000 line (see chart).

And CDS, a Sunnyvale, Calif., start-up founded by Gene Amdahl, has started shipping its new CDS104 machine [CW, June 9]. Amdahl is the founder of mainframe maker and IBM rival Amdahl Corp.

CDS104 and Multiprise both provide an internal disk subsystem; can come with the latest versions of the OS/390, VM or

VSE operating systems installed; and include adapters that let users hook the mainframe directly to a network without cumbersome gateways.

"We are using [the CDS104] as a mainframe replacement," said Stan King, a manager at Information Technologies Co. in Falls Church, Va., an early tester of the CDS104, for its own use. "The cost to us was a fraction of going to a larger CMOS or used box." And the Multiprise even packs more punch than some of the older, water-cooled models.

A Multiprise helped open wide a limited batch window at the Massachusetts Medical Soci-

EYES ON THE MULTIPRISE

Additions to IBM's Multiprise 2000 line of "small mainframes"

- Fast write to the internal disk subsystem, which speeds batch processing
- Logical partitions to share all data in the internal disk subsystem
- High-end multiprocessor models
- Highest-end Multiprise will upgrade directly to IBM's G3 or G4 mainframes; cheaper than treating the exchange as a new purchase

ety, which publishes the *New England Journal of Medicine*. "We had just about run our old mainframe into the ground," said Terry Spaulding, manager of technical support at the Waltham, Mass.-based organization. "The Multiprise 2000 cut our run times by 50% and let us do year 2000 testing, too."

And the Multiprise has closer ties to IBM's regular mainframes than users might think,

given that the small mainframes begin at about 3 MIPS, whereas IBM's largest uniprocessor mainframe now reaches 63 MIPS.

By next year, users of the higher-end Multiprise models will be able to upgrade directly to IBM's G3 and G4 line of regular CMOS mainframes, thus avoiding the cost of putting a completely new machine on the accounting books. □

Managers protect against gadget-itis

CONTINUED FROM PAGE 67

for traditional desktop PC vendors such as Dell Computer Corp. in Round Rock, Texas, and Houston-based Compaq Computer Corp., which are trying to offer more variety to their customers.

"I think there really is a huge number of choices out there and with Intel turning chips out faster than they ever have, our jobs are very difficult," Quady said.

UPGRADE CONCERN

William Treloar, manager of information systems at Carpenters Benefit Funds in New York, said he hasn't seen an overwhelming demand for many of the latest gadgets.

But he said he finds it harder to keep track of the "product of the week."

Treloar said he is more concerned about upgrading his operating systems to a Windows NT environment.

He said that better management tools should make it easier to implement a standard desktop configuration.

That is what Microsoft Corp. is hoping users will latch on to as it pitches its Zero Administration for Windows tools, which are the basis for managed PCs and the NetPC.

It is also what analysts are advising their clients take care of first — putting management tools in place, whether from Microsoft or some other vendor, before users latch on to newer hardware.

Chris Goodhue, an analyst at Gartner Group, Inc. in Stamford, Conn., said he advises clients to ignore the hype of hardware. Instead, he tells them, get management under control first. □

Senior writer Mindy Blodgett contributed to this story.

Storage devices Jaz up company

CONTINUED FROM PAGE 67

dardized the 175 workers at the San Francisco headquarters on Jaz drives by Iomega Corp. in Roy, Utah. The Jaz drives, which have 1G-byte capacity hard disks, are external storage devices for PCs and Macintoshes.

A walk through Landor's offices reveals that nearly every desktop has 10 or more Jaz disks. The disks usually contain works in progress for a variety of clients, including software boxes for Microsoft Corp. and a logo design for Federal Express Corp. An example of the firm's work

for FedEx includes the idea to shorten the company's name to FedEx; the company's tagline, "The World on Time"; and the incorporation of a hidden arrow in the FedEx name to connote movement.

From the IS point of view, using a standard removable hard drive means a help desk worker can bypass a troublesome Macintosh or PC, or quickly update a machine with data on the Jaz disk, Pomon said. "We haven't quantified how much money it saves us,

but you can imagine how quick it is to detach a removable drive from a bad PC instead of trying to download from that PC's hard drive," he said.

More important is how the devices satisfy Landor's end users.

Catherine Rude, who helps create packaging designs for consumer products such as beer bottles and cereal boxes, said she lost a year's worth of work two years ago because of a corrupt tape cassette from a competitor. The bad experience has lingered. "I do go back to that [drive] if a client needs me to, but I mainly use Jaz," Rude said.

In addition to archiving work, the capacity on the Jaz drive is helpful because it lets users create and store many large files. One package design can produce 200M bytes of data. And if a client or a co-worker needs to see the work, it is portable, Rude said.

"I'd be at a loss if weren't for removable media," said Chris Jones, who helps Landor's clients build interactive World Wide Web sites. "With what I do, there's a tremendous amount of manipulation of files."

Final work at Landor is often backed up on a network server and put on a CD. Each user is expected to do backup at his own desktop, which tends to work well with technically savvy

NEW PRODUCTS

DAGAZ TECHNOLOGIES, INC. has announced the JERA 2120 Advanced Digital Subscriber Line Access Multiplexer for broadband multimedia networking.

According to the Bridgewater, N.J., company, the JERA 2120 delivers data, voice and video services up to three miles from a central office.

It was designed partly to make high-speed Internet data accessible to thousands of subscribers, so subscribers don't have to interrupt telephone service.

Pricing for the JERA 2120 starts at \$130,000.

Dagaz Technologies
(800) 724-0476
www.dagaztech.com

LEK TECHNOLOGIES, INC. has announced SpeedPro, a jumperless PC and motherboard.

The base SpeedPro PC includes a Cyrix Corp. 166M bit/sec. microprocessor with a 2G-byte hard drive and a 16-speed internal CD-ROM drive.

The SpeedPro motherboard features 512K bytes of pipeline burst cache, with support for two high-speed serial ports, one parallel port and one floppy disk port.

Pricing for the base PC starts at \$1,499; pricing for the motherboard only starts at \$135.

Lek Technologies
(806) 622-3313
www.lektech.com

DATA
WAREHOUSING

Great Debate



How many data warehouses do you have?

WAREHOUSE: We've had eight.

To what do you attribute so many warehouses?

WAREHOUSE: Seven mistakes

TALES OF TRIAL AND ERROR

from the front lines of data warehousing are sobering by any measure. The good news is that the user above still managed to realize substantial benefits despite the seven mistakes. The mistakes occurred over a number of years and several were ultimately deployed as what we identify today as data marts.

But not every firm investigating a data warehouse may be as lucky. Today, there are many more choices for a company looking at a data ware-

house . . . and a much smaller corridor of allowable error for the selection of equipment and technology. This is because not only are more companies offering data warehouse tools, but also because user resources (people, time and money) have never been stretched thinner.

The Standish Group recently initiated a primary research effort to help subscribers to its COMPASS planning and strategy service determine how best to select and deploy data warehousing technology. This effort, called Project Explore looked at 60 data warehouses, which supported more than 16,000 knowledge workers. Half were provincial warehouses and half merchant warehouses.

Provincial data warehouses are sourced from a single provider who crafts both the hardware and software, and have tightly-coupled hardware and software architectures optimized for one another. Examples include IBM's SP2/PE, NCR's Teradata and Tandem Computers' warehouse offerings.

Merchant data warehouses are sourced from multiple providers whose hardware and software must support multiple partners. Their architectures are not as tightly coupled. Such providers include Informix, Oracle and Sybase.

The Great Debate

The question "Which data warehouse is best for my company?" generates as many answers as there are vendors. Every vendor has an opinion as well as a list of reasons why their opinion is the correct one.

In conducting Project Explore, we wanted to hear what users and implementors of warehouses had to say, and what they said often differed from the representations made by vendors. While we learned there are no silver bullets, we also learned many good tools are being deployed or implemented poorly — so poorly that their value is being seriously diluted.

The role that vendors and third-party consulting services can play in installations is a pivotal one: to minimize these poor deployments and implementations. Not only can these providers return early wins, but in the long term they produce a much more productive warehouse.

With this in mind, one must consider that for user needs at the departmental or business-unit level, the range of choices is much broader and a poor choice is less damaging. For a large-scale data warehouse at the enterprise-class level, the choices narrow rapidly and the impact of a choice can be profound. The choice can affect a company's



The Great Debate

A SPECIAL STANDISH RESEARCH REPORT

competitiveness through early detection of customer preferences and buying habits; resources consumed in the warehouse implementation phase; and most importantly, resources consumed in the sustaining cost of opera-

in usage increases awareness of the relationship between the availability of detail data and that of answers. In fact, lack of detail data was the main reason users could not resolve a query from a warehouse.

the table and aggregation component of the metadata requirement. Limitations in the underlying technology's performance, or ability to scale, can be offset by deploying additional "prebuilt" answers to anticipated questions. These prebuilt answers are the tables and aggregations. They are also metadata.

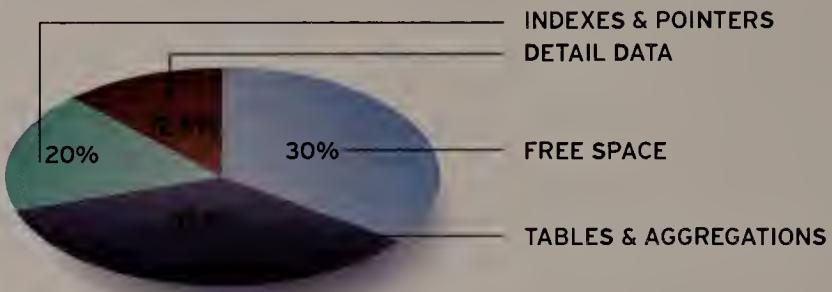
Metadata is expensive. In a data warehouse, the tables and aggregations easily outstrip the storage space consumed by the system's indexes and pointers to data. This cost is manifest in not just the storage consumed but also in the resources allocated for building, maintaining and keeping content current. The normal growth associated with the detail data used to build tables and aggregations is itself substantial.

Imagine adding not the four bytes of zip code data in the example of the Post Office but 200 bytes of detail data per record to your warehouse, and a few tables and aggregations to satisfy your users' growing appetite for answers. Suddenly, scalability has new meaning.

Most merchant warehouses average less than 5GB per warehousing employee. The best merchant performance is just under 10GB per warehousing employee. Combining user responses with Standish Group research leads to three compelling metrics:

- ♦ The largest warehouses belong to users who deployed provincial ware-

THE METADATA PICTURE



tion for the warehouse.

Most users indicated that their original business purpose for installing a data warehouse had expanded. That expanded purpose led to growth that was substantial ... and sometimes explosive. Newer warehouses tended to have 20-50 users. Older, enterprise-class installations had several hundred, with a few sites reporting user populations in the thousands. As one respondent noted, "Once your users realize how much they don't know, your challenge becomes availability and [detail] data acquisition."

To achieve a sustained level of user satisfaction with a data warehouse requires timely resolution to queries and a minimum of unresolved queries. The first successes from a data warehouse typically spark a user's imagination. The resulting uptick

Explosive growth

Data growth of any type in warehouses can be explosive. Consider the storage growth involved in adding the full 9-digit U.S. Postal Service Zip Code to 40 million rows of storage. The four additional characters seemingly added 160MB of storage requirements. In fact, the increase was probably closer to 500MB! The reason? That ethereal data warehousing phenomena known as metadata — in its simplest form, pointers and indexes.

In addition to the pointers and indexes any warehouse needs to operate, metadata also includes tables and aggregations. The metadata phenomena is rarely understood until after the first data warehouse experience. The more scalable and the more parallelized the hardware and software are, the lower

♦ METADATA IS EXPENSIVE.
IN A DATA WAREHOUSE,
THE TABLES AND
AGGREGATIONS EASILY
OUTSTRIP THE STORAGE
SPACE CONSUMED BY
THE SYSTEMS' INDEXES
AND POINTERS TO DATA.



The Great Debate

A SPECIAL STANDISH RESEARCH REPORT

- house technologies.
- ♦ For warehouses below 1TB, these firms reported 35-40GB of storage per warehouse employee.
- ♦ Provincial data warehouses realize economies of scale as they grow in terms of users and capacity. Merchant data warehouses do not realize these same economies.

Storage-to-personnel ratios in 1TB and larger provincial warehouses showed improvements over sub-TB provincial warehouses. The same was not true for merchant class warehouses, which required significantly more support employees as they approached 100GB.

Warehouse size is key

The key factor in determining the type of warehouse was size. Fewer than 5% of the respondents who planned warehouses below 100GB chose a provincial warehouse. When initial warehouse size exceeded 100GB, provincial warehouses were chosen 75% of the time. When planned warehouse size exceeded 250GB, provincial warehouses were implemented exclusively.

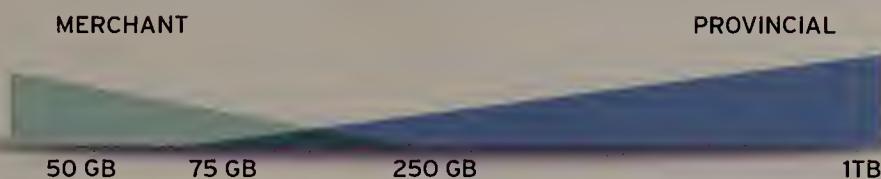
The graph at the top of this page represents realistic thresholds for deploying the two warehouse technologies. If a company is near one of the transition thresholds, it should consider moving up to the next technology tier; the incremental costs can be small, while force-fitting the other technology can be more

expensive and less satisfactory in terms of performance.

Although operating costs for provincial and merchant data warehouses are remarkably similar at these transi-

significant. Most enterprise-class warehouse users have chosen provincial offerings, which is partly attributable to the extraordinary capacity requirements, and partly to a

USER DATA WAREHOUSE TECHNOLOGY DEPLOYMENT



tion points, providers of provincial data warehouses appear to be singularly unsuccessful in persuading users that they fit the smaller warehouse environment. Providers of merchant warehouses are equally unsuccessful in penetrating the high ground that has been the forte of provincial warehouses.

A company's commitment to a data warehouse above 250GB, and certainly at the terabyte level — in terms of people, time and money — is

sometimes unspoken but always present issue of risk management. Provincial warehouses have demonstrated an enviable performance record at TB and near-TB capacities.

What do these preferences mean? The margin of allowable error for equipment selection for smaller warehouses (data marts) is relatively large. It is hard to make wrong decisions at this level and low cost of entry looms big on the horizon. On the other hand, enterprise-





The Great Debate

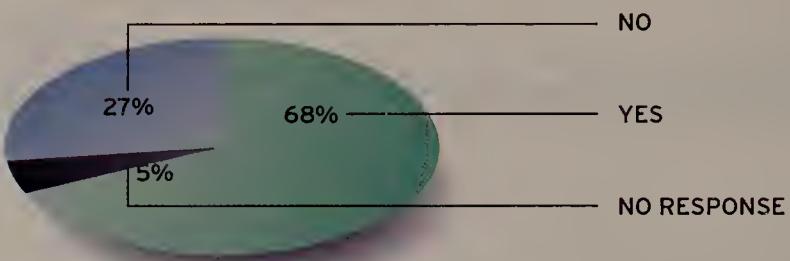
A SPECIAL STANDISH RESEARCH REPORT

class warehouses have a rapidly narrowing corridor of allowable error for equipment selection. Risk management replaces low cost of entry in the selection pecking order.

a large database, they represent very different structures and operating environments than traditional databases. Some of their differences are manifest in the design, archi-

use of consultants (which they strongly recommended), these IT professionals were nearly unanimous in their opinion that increased planning, training and user involvement represented prime opportunities for enhancing data warehouse implementations.

USERS DESIRING VENDOR CONSULTING SERVICES FOR A SECOND INSTALLATION



Success criteria

To the left is a table showing the top success criteria for data warehouse users. After naming user involvement as the top criteria, respondents placed equal emphasis on the importance of clear business objectives and vendor consulting services. Because of the complexity of warehouse design and architecture, a majority of respondents said they would not contemplate a second warehouse without vendor consulting services.

Since the top three success criteria represent 50 of the possible 100 success points assigned by The Standish Group, their importance cannot be overemphasized. A failure to achieve in these critical areas fatally impairs the success of the proposed data warehouse.

Most requested items

Although warehouses are sometimes initially viewed as

ecture, deployment or operation of the warehouse. The mischaracterization as a large database can lead to implementation and operating issues for the installation team as well as users.

Respondents identified three items that would improve the quality of their implementations: better planning; increased IS staff training; and more user involvement. These three items point to a need for additional knowledge on the part of first-time data warehouse implementors (which all but one of the respondents were).

The annual IT budgets of the companies of the survey respondents averaged \$78 million per year with a high of \$300 million per year. These were sophisticated IT shops that already had considerable experience with multiple large-scale database implementations. Despite their credentials and their

Support personnel

Users drew distinctions between the operating characteristics of merchant and provincial warehouses, citing issues such as the number of personnel, particularly DBAs (database administrators) required to support the warehouse, along with current and planned warehouse size.

The number of support personnel necessary to operate a data warehouse significantly affects both initial deployment and sustained operating expense. Both provincial and merchant warehouses required about the same average number of support personnel: 6.0 and 6.7, respectively.

Although these figures were based on current year operations, they indicated future requirements. The largest operating warehouse in the study, a provincial warehouse, required only three support personnel.

Personnel requirements for merchant warehouses, however, increased rapidly as their capacities approached 100GB. The larger merchant warehouses in the 75-150 GB range used 15 to 20 support personnel.

**BASED ON RESEARCH AND
TELEPHONE INTERVIEWS,
DATA WAREHOUSING
USERS IDENTIFIED THE
FOLLOWING SUCCESS
CRITERIA:**

User Involvement	20
Clear Objectives	15
Vendor Consulting	15
Limited Scope.....	10
Executive Commitment	10
Good Vendor Support.....	10
Phased Milestones.....	5
Technical Expertise	5
Right Technology.....	5
Other.....	5



The Great Debate

A SPECIAL STANDISH RESEARCH REPORT

Metadata fingerprints

A warehouse's responsiveness is a function of query type. As a rule, simple queries execute quickly; complex ones take longer. Predictable, repetitive queries often have their answers consolidated in a table or aggregation (metadata). The amount of metadata varies with the complexity of the anticipated query, the frequency of the query and the scalability of the underlying hardware and warehouse software.

Poor scalability, simple queries and high query volumes translate into larger numbers of tables and aggregations. Increased use of tables and aggregations can improve system response because query answer sets can be ready and waiting. The result? For a user, it is rapid query resolution; for an IT shop, it is a large and growing number of tables that must be created and maintained at some regular interval... frequently daily.

The creation and subsequent maintenance of these devices is manpower intensive. Merchant warehouses depend on these tools more than their provincial counterparts. Increased dependence on tables and aggregations and the higher number of support personnel required for 75GB+ merchant warehouses seem closely coupled.

Warehouse size

Merchant data warehouses averaged 62GB; users planned to grow them to an

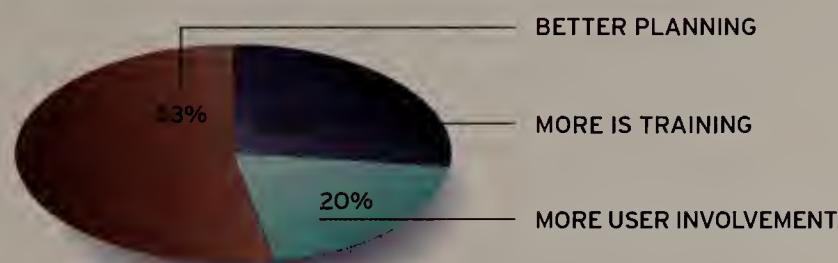
average of 118GB. Provincial warehouses averaged an initial size of more than 200GB with a planned growth to more than 1TB. Users forecast that the typical merchant warehouse would double in three years, and that over the same period, provincial warehouses would more than quintuple.

Both types of warehouses were expected to reach their planned maximum size in similar periods. Provincial warehouses were expected to reach the maximum planned

expanding scope of their inquiries. The reason users gave most frequently for the inability to resolve a query was neither technology nor tools nor complexity; it was lack of detail data.

The potential for rapid increases in the amount of detail data and storage space required, regardless of system architecture, points to a need for the warehouse to be able to scale both rapidly and transparently for commercial users. The potential for rapid warehouse growth over rela-

TOP THREE CHANGES RECOMMENDED BY DATA WAREHOUSE IMPLEMENTORS



storage in an average of 2.94 years; for merchant warehouses, it was 3.3 years.

All users indicated that their warehouse would at least double in size within three years of its implementation. Those deploying enterprise-class warehouses planned for growth rates of five times or higher over the same time period.

IT management attributed this growth to their users' rapidly escalating appetite for warehouse services and the increasing amounts of detail and summary (meta) data necessary to resolve the ex-

tremely short periods of time emphasizes the need for linearity in both the performance and cost of performance scaling metrics. Rapid warehouse growth, coupled with rapid growth in the number of support personnel, discourage the use of some technologies in large warehouse deployments.

Cost of ownership

In our survey, we viewed cost of ownership from three perspectives: hardware cost, software cost and annual operating expense. In each category, we looked at the type of



The Great Debate

A SPECIAL STANDISH RESEARCH REPORT

6

warehouse, the size of warehouse, and the hours of its operation.

Hardware costs averaged \$481,000 for merchant data warehouses and \$2.1 million for provincial warehouses. This wide disparity can be attributed to the warehouse's current and planned expansion size. The average in-service provincial warehouse was already essentially 100% larger than its merchant counterparts would be at planned maximum capacities.

Users of merchant data warehouses reported an average of 62GB in current configurations, with planned capacity averaging 118GB. Current configurations of provincial data warehouses averaged over 200 GB, or nearly double the merchant warehouse's planned expansion size. Users planned to grow these same provincial warehouses from this already significant capacity to more than 1100GB in less than three years.

Data on price and size argues that users were building two very different classes of warehouse, and it was visible in the cost of their hardware. On average, merchant warehouse hardware cost \$7,750 per GB; provincial warehouses cost \$10,000 per GB.

A look at the larger warehouses suggested that cost per GB of storage would decline with growth in both categories. More fully populated merchant warehouses appeared to converge on \$3,000 to \$4,000 per GB; provincial warehouses appeared to con-

verge on \$2,900 to \$3,600 per GB of storage. The hardware costs per unit of storage appeared comparable for both alternatives as installations developed more fully.

Software costs

The hardware pricing barometer predicted two very different capacity data warehouses; so too did software pricing. Software costs for merchant data warehouses averaged \$571,000, compared with an average expenditure of \$1.3 million for provincial warehouses. This is in part due to the differences in tools and tool technologies needed to manage a 100GB warehouse vs. those necessary to manage a TB-class warehouse. Users of very large warehouses also face a much greater data acquisition, loading and maintenance challenge than users of smaller data warehouses. TB-class warehouses purge, load and manipulate as much data in one month as a 100GB warehouse does in an entire year.

Provincial warehouses had substantially lower software cost per GB of storage. Merchant data warehouses consumed an average of \$9,750 in software per GB of storage; for provincial warehouses, it was \$6,500 in software per GB.

Several users who operated enterprise-class provincial warehouses that started from more modest beginnings commented on the amount of data that was regularly manipulated. One

summarized the comments of the group when he said, "Big jobs need big tools!"

Annual operating costs tracked less predictably against hardware and software costs. Merchant data warehouses commanded an average annualized operating cost of \$906,000; their provincial counterparts averaged \$1.4 million. This reflects some of the increased personnel costs associated with the larger merchant-class warehouses.

One would think that larger warehouses require larger support staffs. But when users were asked about the numbers of DBA and non-DBA support personnel required to operate their data warehouses, their responses indicated this was not so. On average, merchant data warehouses require 6.7 support personnel and provincial data warehouses require 6.0 support personnel.

Provincial warehouses tend to group tightly around 6.0 support personnel per warehouse. The merchant warehouses also tend to cluster around 6.7 personnel for those of 50GB to 75GB. But for 75GB to 100GB warehouses, users began to report surprising increases in the number of support personnel deployed, with some respondents indicating 18 or more support personnel.

Some of these additional personnel are used to maintain a higher ratio of summary tables and aggregations than their provincial counter-

**• ONE WOULD THINK
LARGER WAREHOUSES
REQUIRE LARGER
SUPPORT STAFFS. BUT
WHEN USERS WERE
ASKED ABOUT THE
NUMBER OF SUPPORT
PERSONNEL REQUIRED
TO OPERATE THEIR
WAREHOUSES, THEIR
RESPONSES INDICATED
OTHERWISE.**



The Great Debate

A SPECIAL STANDISH RESEARCH REPORT

parts employ. Others are consumed in the development and deployment of new and additional summaries and aggregations to meet rising user demands. Provincial warehouses are not free from the requirements to build summaries and aggregations; however, their users feel less compelled to build these devices than their merchant counterparts.

Summary

In terms of warehouse costs, provincial data warehouses offer substantial advantages at 250GB storage levels and above, but do not enjoy the same cost advantages in the sub-75GB capacities as the merchant data warehouse offerings. If a warehouse is targeted for a data mart deployment of 75GB or less, user reports indicate a merchant warehouse may be more cost effective.

Merchant warehouse expenses for support personnel (DBAs and non-DBAs) climb rapidly as warehouse capacities approach the 75GB to 100GB levels. Provincial warehouse support personnel expenses do not exhibit this same type of growth. Provincial implementations even at TB or near-TB sizes exhibit economies of scale that produce minimal growth in support personnel.

All warehouses grow rapidly. Even the smallest growing ones double every three years. Enterprise-class warehouses will on average

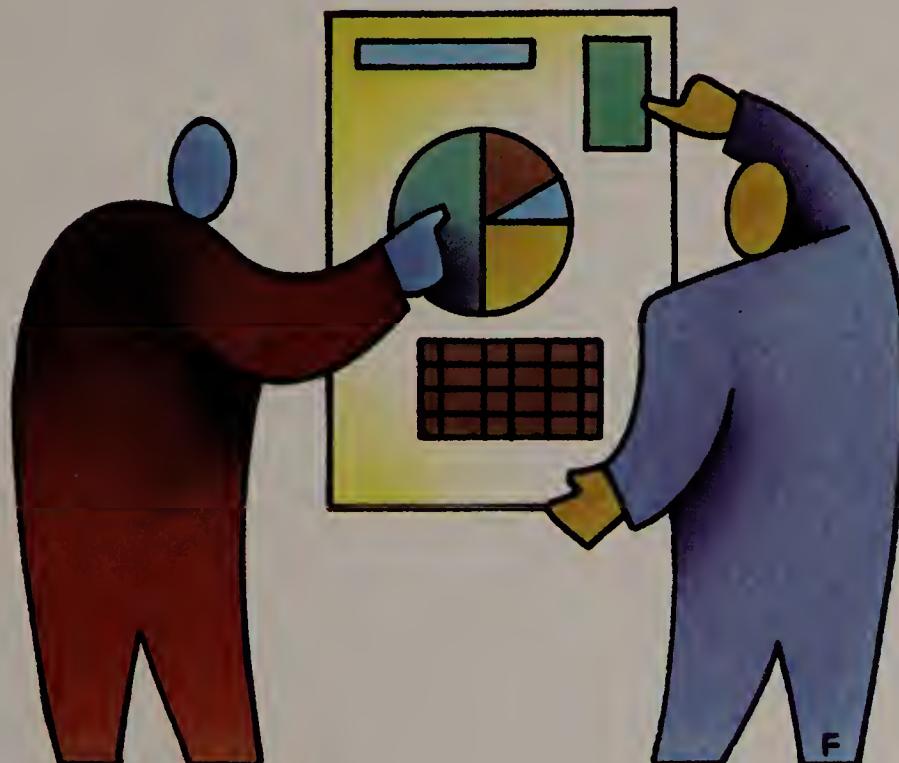
grow by a factor of five over the same period. The source of the growth is success-related increases in user demand for access and new query resolution that requires access to increasingly more detail data. The most prevalent reason for an unsuccessful query resolution is insufficient detail data.

Provincial warehouse users place less emphasis on summaries and aggregations than merchant warehouse users. If a warehouse has a rapid growth in detail data storage accompanied by a corresponding rapid growth in summary tables and aggregations, the sustaining cost of operation will likely be raised by increasing numbers of DBA and non-DBA support personnel. The data storage and management require-

ments also escalate rapidly.

Responsiveness to a knowledge worker's query, including rapid resolution, not only reinforces the value of the warehouse but provides enhanced competitiveness for the firm using the warehouse technology. Increasingly, large support organizations for a data warehouse, aside from being expensive, can be an early indicator of reduced responsiveness and reductions in successful query resolution.

This White Paper is based on independent research previously published as part of Standish Group's COMPASS informational research service. Tandem Computers funded the inclusion of this supplement in Computerworld so as to share this research with the IT community.





The Great Debate

A SPECIAL STANDISH RESEARCH REPORT

ABOUT THE STANDISH GROUP AND COMPASS

The Standish Group International, Inc. is an advisory research firm for users and vendors in the mission-critical application marketplace, with a focus on electronic commerce. The company's research draws on extensive real-world experience and years of market research and consulting. The Standish Group also provides custom counseling services to clients in the Fortune 500, government agencies and major universities.

COMPASS (Comprehensive OLTP Management Planning and Strategy Service) provides in-depth analyses of existing and emerging technologies which The Standish Group believes are essential to the success of on-line, business-critical applications. The key enabling technologies are:

- Transaction management comprised of transaction processing monitors, database management systems and electronic commerce.
- Reliable messaging and queuing software.
- Object-oriented technologies.
- High availability and high data integrity facilities.
- Support of critical technologies including application development, testing and enterprise-wide system management capabilities.

The COMPASS service, available on an annual subscription basis, includes objective, in-depth technology reviews as well as periodic and on-demand access to the Standish research staff.

The Standish Group International, Inc.
586 Olde King's Highway
Dennis, MA 02638
(508) 385-7500 Telephone
www.standishgroup.com

ABOUT TANDEM COMPUTERS INC.

Founded in 1974, Tandem Computers Inc. designs solutions that companies rely on to compete in a business world that runs 24 hours a day. Headquartered in Cupertino, Calif., Tandem, through partnerships with industry leaders, is bringing its strengths of robustness, scalability, business-critical solutions and services to the world of decision support, networked computing and the Internet/intranet explosion.

Tandem entered the decision support market in 1993 and has established itself among the top tier of suppliers by defining a total solutions approach to decision support, helping financial service institutions, retailers, telecommunications providers and other companies rapidly realize the business value of their information. With Tandem's new Object Relational Data Mining architecture, companies can transform data into knowledge.

Tandem's approach encompasses business-driven services, technology optimized for single subject data marts as well as large scale data warehousing, and strategic partnerships with leading database and software tool vendors. Tandem is uniquely positioned to blend all the components of a customer's decision support or data mining initiative into a seamless, end-to-end solution, from business exploration to production.

Tandem Computers Inc.
19333 Vallico Parkway
Cupertino, CA 95014-2599
(408) 285-6000
www.tandem.com

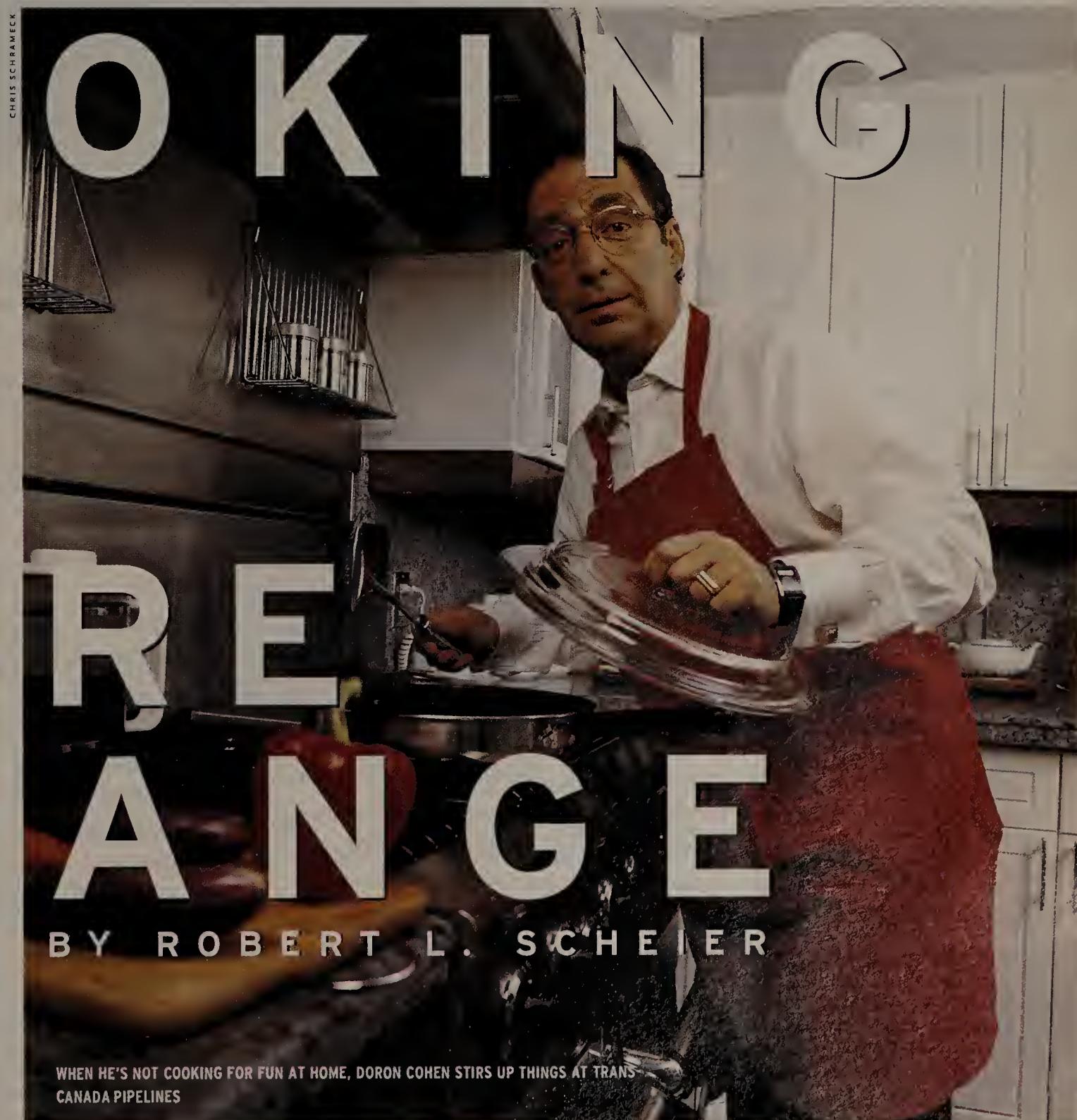
THE
STANDISH
GROUP

COMPUTERWORLD
Custom Publications

Managing

O' TransCanada! It isn't enough that CIO Doron Cohen reformed IS, pioneered client/server applications and forged close ties with line managers. Today's business demands more, so Cohen is again . . .

COOKING UP MORE CHANGE



Doron Cohen still isn't happy. And that means big changes for his information systems organization at TransCanada PipeLines Ltd.

Sure, he has already helped transform the Calgary, Alberta, company from a sleepy, regulated utility to an aggressive, \$10.8 billion (Canadian) global competitor. He has successfully pioneered distributed databases and client/server applications. And he has changed IS from a much-hated support function to a true business partner with a can-do, aggressive attitude.

Cooking up more change, page 70

EYES ON THE PRIZE: IS FOCUSES ON THE BOTTOM LINE

BUSINESS CHALLENGES

Repair pipelines with minimum downtime.

Understand total risk company faces from natural gas deals being negotiated by different business units.

Ensure compressors that move gas through pipeline operate at maximum efficiency.

IS RESPONSE

Deployed automated system to better manage repair projects. System is in use and manages \$2.5 million worth of projects.

Created single database with data drawn from multiple operational systems to allow companywide risk analysis. Now rolling out analysis applications that will use the data.

Now rolling out system to catalog performance and maintenance information about compressor parts.



TransCanada

Name: TransCanada PipeLines Ltd.

Headquarters: Calgary, Alberta

Revenue (1996): \$10.8 billion (Canadian)

Profit (1996): \$425 million (Canadian)

Line of business: Energy transmission, marketing, generation and consulting

Key business goal: Increase earnings per share from \$1.60 in 1994 to \$3 by 2000

Key business challenges: Maintain aging pipelines with minimum maintenance downtime. Provide new services to gas shippers, such as the ability to buy or sell gas while it's in the pipeline. Grow new businesses such as energy trading and consulting. Expand overseas.

COOKING UP MORE CHANGE

CONTINUED FROM PAGE 69

He has survived and even thrived as vice president of IS and telecommunications, even while the energy transmission and marketing company has struggled to adjust to a deregulated global market.

So why isn't Cohen content? Because even the fastest client/server development cycles aren't keeping up with business change. "They've done a good job of not inhibiting our progress, in allowing us to grow at a fairly steady pace," says Cliff Howe, TransCanada's general manager of market risk management. However, "at the rapid pace we're growing, they're stretched."

To help IS move more quickly, Cohen has launched a "third wave" of technology change that calls for World Wide Web-enabled applications, reusable components and "disposable databases" created as needed for specific applications. He also wants to forge closer ties to the business and fine-tune his programs to keep good people. But the real challenge is changing the attitudes and

habits of the 250 IS professionals who must constantly do their jobs better if TransCanada is to meet its profit targets.

Here's how Cohen has succeeded so far and what it will take to reach his most ambitious goal yet.

THE PEOPLE TOUCH

Growing up in Tel Aviv, Israel, "my childhood inclination was to wire things up," Cohen remembers. Through the years, his tinkering progressed from computer hardware to computer software, from software to business issues and, finally, to the most critical resource of all — people.

Not that Cohen isn't highly technical. He has developed ballistic missile guidance systems, run large mainframe data centers and wrote a text book on data management.

The switch in his thinking came in 1983 when he was named chief information officer at a money-losing Canadian mining company to help turn it around.

In past jobs, Cohen remembered, he'd focused on technical questions about operating systems and disk drives. But, he says, "people are what make or break you. How you get people to change over time, and to keep changing, is far more important than either technology or even business issues."

To that end, Cohen takes pains to know everyone on his staff. "If you want to talk techie, he'll talk techie. If you want to talk about philosophy, religion, history, he'll talk to you about that," says Jess Harding, who worked with Cohen at TransCanada before becoming manager of IS at competitor Alliance Pipeline Ltd., also in Calgary. "He wants to see more of the well-rounded person than simply that technical bullet" on a resume, Harding says.

To attract top skills in a tight labor market, Cohen's organization is piloting a "Career Leaders" program designed to show techies how they can expand their skills and responsibilities without moving into management jobs for which they may not be qualified. If successful, it's expected to move beyond IS into the rest of the company.

Guiding all this effort are four key values identified by Cohen and a brainstorming team early in his tenure. They are "partnership, teamwork, the energetic pursuit of results and integrity," he says.

Buzzwords? Maybe. But anyone who can't or won't live by them is invited, as Cohen says, to "find happiness elsewhere." That's what happened to 34 data center veterans who, in early 1987, threatened to quit unless he reversed plans to unplug the mainframe. He called their bluff, even though he still needed the mainframe for critical business functions.

Most of the rebels eventually left. In fact, by 1990, when TransCanada moved from Toronto to Calgary, 60% of the company's IS organization had moved on.

Although his staff insists Cohen is big on coaching and encouragement,

THE COHEN FILE:

BORN: Jerusalem

EDUCATION:

- Bachelor's degree, electrical engineering, Israel Institute of Technology
- Ph.D., computer science, University of Waterloo, Ontario
- MBA, University of Toronto

PREVIOUS POSITIONS:

- Engineer, Northern Electric Division, Bell Canada
- Data center manager, Alcan Aluminum Ltd., Montreal
- Director, computer center, Israel Institute of Technology
- Director of Computing Services, University of Toronto
- Chief information officer, Kidd Creek Mines Ltd., Timmons, Ontario

HOBBIES: Cooking, woodworking



CHRIS SCHRAMMCK

GOOD NEWS/BAD NEWS

WHAT'S GONE WELL

Client/server applications can be adapted at the user interface ...

IS has improved communication with its "business partners," understands business challenges ...

IS has greatly reduced the time needed to develop new systems ...

Distributed databases have helped speed development of new systems ...

WHAT DOESN'T WORK WELL

... But inflexible databases cause back-end maintenance headaches.

... But some staff still look down on users who have trouble doing "easy" computing chores.

... But the energy business changes more quickly than IS can develop new systems.

... But differing data models make it hard to share information among those systems.

feats such as rebuilding every corporate information system in three years "do not come just by gazing at navels and feeling nice," Cohen says. "There is a very, very hard core of no-compromise business sense that can only allow touchy-feely up to a point. Then the steel blade comes in."

THE BUSINESS CHALLENGE

When Cohen joined TransCanada in 1986, it held 20-year contracts to ship more than 90% of the gas in western Canada. Billing and ordering systems were primitive, befitting a company that had only 16 large customers.

Deregulation boosted the number of customers to 300 literally overnight and to 3,000 within a year. Each increase meant more work — and more complicated work — for TransCanada's applications. Just one upcoming change, to measure gas by energy content rather than volume, "is probably going to be as big a deal for us over the next few years as the year 2000" is for other companies, says Jim Brignall, director of development and business systems.

TransCanada's aggressive acquisition of other companies means more applications to integrate. Its moves into new businesses such as energy marketing mean new applications to build and maintain. It's a testament to Cohen's organization that TransCanada has emerged from deregulation as a powerhouse, not a has-been. Its revenue rose last year to \$10.8 billion from \$7 billion in 1995, and earnings per share rose to \$1.85 from \$1.75 in 1995. Prospects are so bright that management recently upped its earnings target from \$2.40 to \$3 per share by 2000.

Despite the technical challenges of coping with growth, Cohen tries to keep everyone focused on the business. As project leader Laurie Houston briefs her peers on a new system to calculate the risk of buying or selling natural gas based on how prices change, Cohen interrupts to point out that risk management "was a hot topic at the annual meeting." After she's done, Cohen turns in his seat to make sure everyone is listening. "Laurie is being very modest," he says slowly. "This is our most strategic project."

He keeps as close an eye on technical details, at one point challenging a presenter about his choice of Microsoft Corp.'s Open Database Connectivity data access specification instead of TransCanada's standard tool to link an application with needed data. Cohen is adamant about keeping a "common front" where everyone uses the same tools, says Sandy Leach, another IS project leader. That way, developers can easily be moved among projects, and — just as important — share what they learn.

THE ORGANIZATION

When Cohen came to TransCanada, "everyone hated us, and I mean with a passion," according to Brignall. IS was centralized, mainframe-

centric, and the business managers were "out of mind and out of sight," he says.

Cohen created a central shared resources group, funded through assessments on all business units, to maintain the infrastructure, set standards and develop needed technical skills. He also created functional system teams, funded by individual business units.

This structure has won praise from respected outsiders such as Gartner Group, Inc. and from insiders such as Howe.

After buying an off-the-shelf risk analysis application, Howe planned to ask his functional system teams to build links among the package and 20 different data sources.

Cohen says he hates such patchwork solutions because they're expensive and often of little use to others in the company.

In other companies, this would mean a battle between the business manager and IS. But "after sitting down with the IS group," Howe agreed to a single new database drawn from the 20 different data sources, thus requiring only one new data link. What's more, the new database can be used for other analysis in the future. "At the end of the day, you get a better solution. You can't lord it over the IS group," Howe says.

But by 1995, Cohen saw that many client/server applications failed because the business had changed faster than users could define their requirements. This is why Cohen created what he calls his third wave of technology.

THE TECHNOLOGY

The first wave, between 1987 and 1990, meant shutting down the mainframe in favor of distributed databases that could be accessed by individual business units.

The second wave, from 1990 to 1995, meant client/server applications that access Sybase, Inc. databases from either PCs or Macintoshes. These current systems are inflexible, says Cohen, because although it's easy to change the user interface, it's much harder to change the design, or data models, of the associated databases.

For the third wave, from 1995 to 1999, Cohen plans a repository of reusable components from which the functional system teams can quickly build Web-enabled applications, drawing data from disposable databases created from a corporate repository.

Puffing on his pipe, Cohen admits he isn't sure how he'll solve technical challenges such as the lack of needed replication tools. So his plan "explicitly stipulates a world that doesn't exist yet," he says. Then he shrugs, almost cheerfully, like a man who has already created futures other people couldn't see. □

Scheier is Computerworld's senior editor, management.

JIM CHAMPY

TALKING TO THE CYBER-BAFFLED



Recently, I watched a middle-aged executive, dressed in the proverbial pin-striped suit, wander distractingly around Cybersmith, a cybercafe in Cambridge, Mass., that's a cross between a digital playroom and a coffeehouse.

His apparent disorientation reminded me of my work with senior business executives: They know something big is happening with IT but really don't understand what to do about it. For example, the head of a large consumer products company recently told me he'd been asked by his CIO to spend \$10 million to prepare the company for the digital age. This CEO said he wasn't concerned about the money but about whether he was doing the right thing.

As a technology professional, what do you say to line executives who are confused in cyberland?

First, tell them what they need to know most: The most significant development in technology in years is its ubiquity. The omnipresence and accessibility of communicating technologies — principally the Internet — means their business will change.

As you explain that, hold the technobabble. Executives don't want to hear about bandwidth, devices, browsers or digitization. Two minutes of jargon makes their eyes glaze over. They want the discussion to be about net — the bottom line — not *the'net*.

But what if they don't really believe in a wired world or the idea of electronic commerce? The business news that they read has been about the failure of companies

to make money in electronic channels.

Then give them a few facts: Over the next three years, the number of U.S. households online will rise from 14.7 million to 36 million, or more than one-third of all households, according to Jupiter Communications in New York. In that same period, the number of U.S. businesses connected will swell from 40,000 to 380,000, reports Forrester Research in Cambridge. The number of U.S. adults with access to commercial online services has surpassed 45%, AT&T says. And whereas in the past most online buyers were men, today women account for 60% of online shopping, according to the *Internet Shopping Directory*. All this will make technology even more ubiquitous.

So how should you counsel executives to think about technology's effect on their businesses?

First, they must recognize that technology will continue to enable time compression. Businesses must plan for faster response times and deliveries to customers. A person who buys through electronic channels will have no patience with a supplier that's out of stock. It will be too easy just to go to someone else. A business also must plan for faster product obsolescence because product development cycles will continue to compress. The

Sony phenomenon of relentless product refreshment will become the rule.

Second, line executives must know that the consumer will finally become supreme. Just wait for real-time "auctions" to become common. It's already happening on the Internet for automobiles. The consumer just specifies what he wants, and an electronic intermediary finds it for him at the best price.

Third, the way consumers want to buy products — or employees find jobs — will dissolve any vestiges of corporate control over individuals. For example, online job searches are forcing the development of a whole new set of nurturing cultural values within technology companies, where the "assets" are highly mobile and seek meaning and fulfillment in their jobs. This phenomenon will spread to other industries in this time of nearly full employment.

That last point will be a real cognitive stretch for line executives. It isn't easy to visualize a world driven by individuals, especially when you've grown up in a command-and-control management world with a producer-driven view of markets. It may sound Pollyannaish to them, so don't push the point too hard. In fact, be careful not to promote the digital world too aggressively. A line executive's sensibility tells him that we will live in a world that's both digital and physical for a very long time. And that's largely true.

I was reminded of this recently when preaching too hard about the need to prepare for the future. My guest asked me whether he would have to take an airplane home or whether I could "beam" him to Cincinnati — a reference to *Star Trek* technology. It made me realize that when talking to executives about technology, it's important not to get carried away. After all, not everyone is comfortable yet at the cybercafe. □

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. His Internet address is JimChampy@ps.net. His newspaper columns are syndicated by Tribune Media Services.

RESOURCES: IS MANAGER'S BOOKSHELF

Newbie information systems managers who rely on distributed computing will probably find *Security in Distributed Computing* an effective, succinct and logical heads-up to achieving secure networks.

Bruce and Dempsey are consultants at Hewlett-Packard Co.'s Professional Services Organization who specialize in helping clients solve security issues in distributed computing and open systems. The authors suggest taking a cue from your home security system and using a balanced approach to achieving truly secure networks — one that figures in the people and technical issues. Their advice is aimed at the lowest common denominator among managers: It assumes nothing and explains everything.

The opening chapters lay the groundwork by reminding IS managers that security is a business problem that can't be rectified by technical solutions alone. That point is repeated throughout the book, but it's a fine one to hammer home: Uncoordinated expenditures on technical security solutions actually can contribute to the problem.

Mismatched technologies may result in profit/revenue loss

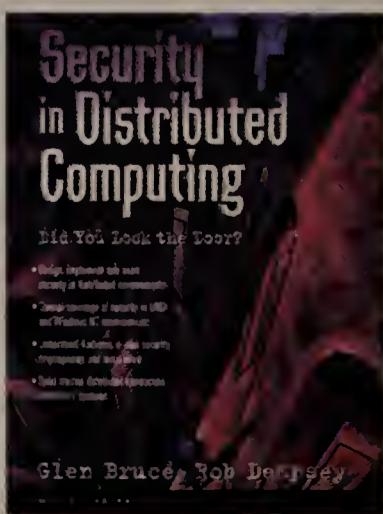
long-term and a network that is more like a data sieve than a reservoir of information. Through repetitive but effective use of analogy, Bruce and Dempsey present the challenge to IS managers in the first six chapters: Shift with the tide, and recognize how the responsibility for security and maintenance may have changed for IS managers. Understand what you're protecting and why you need to protect it before you determine which technology you'll use to do so.

Succeeding chapters concentrate on the steps needed to develop a security policy. These include specific solutions for Unix and Windows NT environments, Internet firewalls, electronic commerce and cryptography.

Experienced IS managers may find the guide a bit simplistic but may cull some nuggets of wisdom in the security implementation examples cited at the back of the book. In particular, they should go to Chapter 23, which outlines a methodology for creating and implementing a secure network. The book also features several appendixes on topics such as strong user authentication and remote access. And it has a killer reference list. — Roberta Fusaro

Security in Distributed Computing: Did You Lock the Door?

By Glen Bruce and Rob Dempsey
Prentice Hall PTR,
Saddle River, N.J.;
(www.prenhall.com); 464 pages;
\$44 (paperback)



SOLID REPORTING



Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____

Title _____ Company _____ E-mail address _____

Address _____ City _____ State _____ Zip _____

Address Shown: Home Business New Renew Single copy price: \$3.00/issue *U.S. Only, Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)

- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

90. Computer/Peripheral Dealer/Dist./Retailer

95. Other _____
(Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT

- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21. Dir/Mgr. MIS Services, Information Center
- 22. Dir/Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning/Administrative Services
- 23. Dir/Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers

- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT

- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

- (a) Solaris (e) Mac OS
- (b) Netware (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTstep

App. Development Products

- Yes No
- Networking Products
- Intranet Products

Yes No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)

- (a) Internet software
- (b) Internet browsers
- (c) Web authoring/development tools

5. Do you use the Internet? Yes No

COMPUTERWORLD

B4F7 X

CANDID VIEWS



Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95* per year - a savings of over 73% off the single copy price.

First Name _____ MI _____ Last Name _____

Title _____ Company _____ E-mail address _____

Address _____

Address Shown: Home Business New Renew Single copy price: \$3.00/issue *U.S. Only, Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)

- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

90. Computer/Peripheral Dealer/Dist./Retailer

95. Other _____
(Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT

- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21. Dir/Mgr. MIS Services, Information Center
- 22. Dir/Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning/Administrative Services
- 23. Dir/Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers

- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT

- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

- (a) Solaris (e) Mac OS
- (b) Netware (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTstep

App. Development Products

- Yes No
- Networking Products
- Intranet Products

Yes No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)

- (a) Internet software
- (b) Internet browsers
- (c) Web authoring/development tools

5. Do you use the Internet? Yes No

COMPUTERWORLD

B4F7 X



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

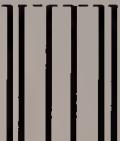
BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144



Buyer's Guide

PRODUCT REVIEWS:

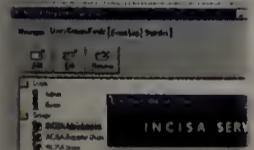
Wayfarer's Incisa and Lanacom's Headliner offer rich presentation and are easy to use. The downside? They're a little clunky and show some performance strain.

Attention Grabbers

M

any products have inherited the "push" label, but only a few truly fit the definition for that emerging technology. The two products reviewed here are examples of "true push," which I define as the acceptance, manipulation, display and even the execution of unsolicited but permitted content from a remote server to the local desktop.

Wayfarer Communications, Inc.'s Incisa is well-suited for getting a flashy



message out to customers or employees — first comes the punchy attention-getter, then comes the content to back it up. It's easy to use, versatile and powerful for the system and content administrator.

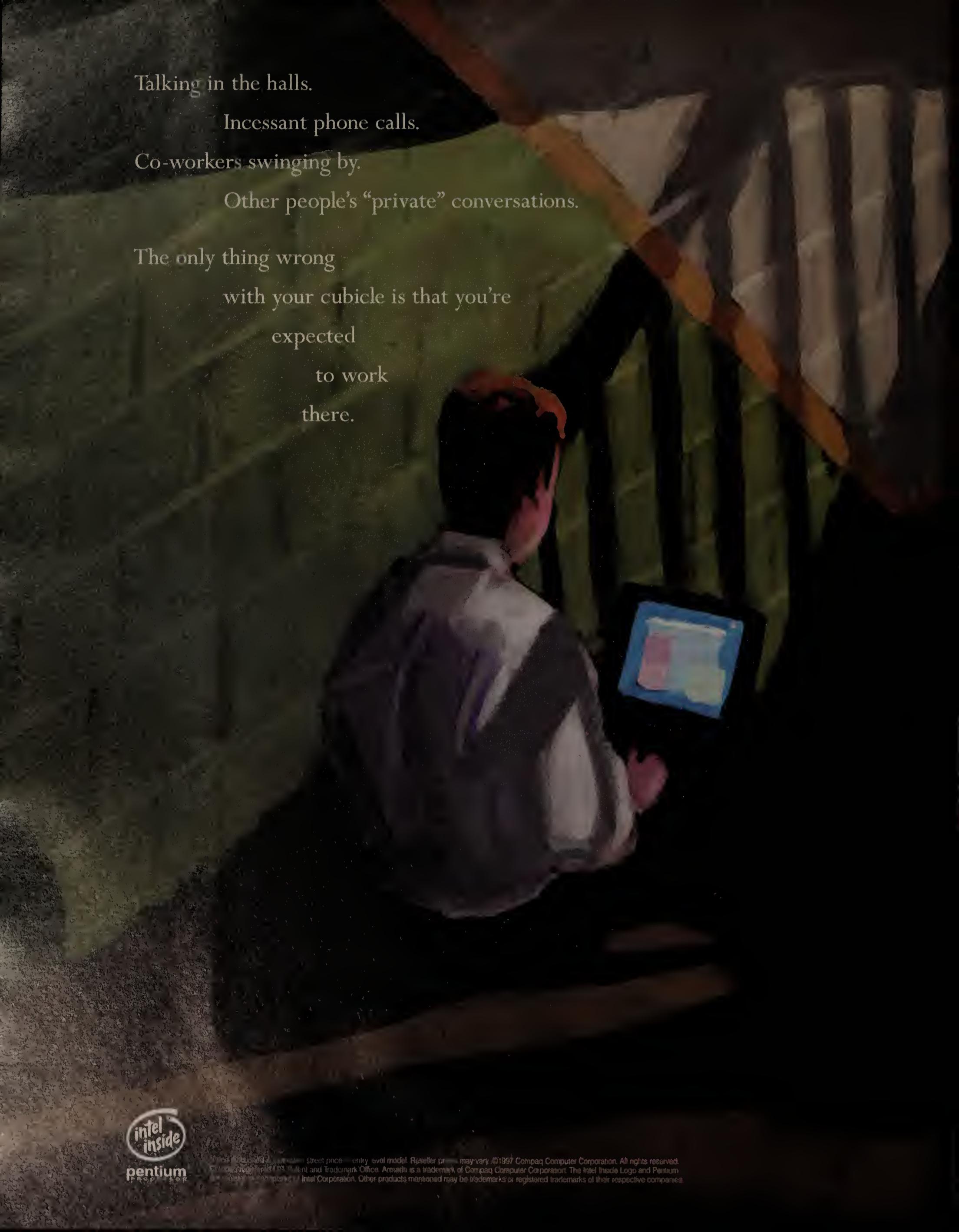
Lanacom, Inc.'s Headliner product family shows creative and useful interface designs — great for transmitting information from different sources to different groups of people. Adding a personal channel was a snap, as was adding filtering criteria. Headliner is particularly well-suited for grabbing and pushing updated information from sites in which the push administrator doesn't have control, such as the stock market or a competitor's site.

In the first entry in this series [CW, May 26], we reviewed Marimba, Inc.'s Castanet and BackWeb Technologies' BackWeb.

**Push
technology
put to the
test**



BY ROSS M.
GREENBERG

A black and white photograph of a person sitting at a desk in an office cubicle. The person is wearing a dark t-shirt and has their head resting on their hand, looking weary or stressed. In the background, there are other cubicles and office equipment.

Talking in the halls.

Incessant phone calls.

Co-workers swinging by.

Other people's "private" conversations.

The only thing wrong
with your cubicle is that you're
expected
to work
there.



Street price entry level model. Reseller price may vary. ©1997 Compaq Computer Corporation. All rights reserved.
Intel and Pentium are registered trademarks of Intel Corporation. Compaq is a registered trademark of Compaq Computer Corporation. The Intel Inside Logo and Pentium Processor are trademarks of Intel Corporation. Other products mentioned may be trademarks or registered trademarks of their respective companies.

A stack of four antique books with worn leather covers, stacked vertically from front to back. The spines show significant age and wear.

Introducing the Compaq Armada 1500.

Starting at \$1,999*,

it is the affordable notebook

that makes it easy for you

to work wherever

you need to go

to get your job done.

It comes with fully integrated features,

so you don't have to

lug around extra parts.

Up to 133MHz Pentium® processor,

10X CD-ROM,

up to 1.4GB hard drive,

floppy drive

(swappable with a 2nd battery),

33.6Kbps data/fax modem

and AC adapter, all built in.

To locate a Compaq Authorized Reseller,

call 1-800-943-7656 or

visit www.compaq.com.



COMPAQ

Has It Changed Your Life Yet?

Attention Grabbers

CONTINUED FROM PAGE 73

Wayfarer's Incisa has four main parts: the Desktop, the Reporter, the Server and the Databridge.

The Desktop is the end-user interface. It catches and displays pushed information. The Reporter lets a configured entry be published to the server for delivery to a subscriber's desktop. The Server permits the various filters, feeds and subscription and membership lists to be maintained with surprisingly good security. And the Databridge allows information sources — including remote servers and corporate databases — to be incorporated into the pushed feed of data. That provides a way, for example, to have immediate low-inventory reports pushed

mation, or reports generated from your databases through a Databridge.

The Reporter is the interface to the delivery database. It tells the server what to deliver to whom and when. Information also can be encrypted if the delivery of sensitive information across an open channel is a concern. The optional channel encryption features cost about \$10, plus \$2 per year for each concurrent user.

Incisa is easy to use. A configured alert has a title, general message, an optional URL and URL title and scheduled start and stop times.

It also includes options for setting a priority and the number of times to push the alert. Each alert can be registered as an update to a previous alert, which effectively overwrites older alerts not yet delivered. Think of stock market updates — only the last one matters, so there would be no advantage in having to wade through older quotes being pushed to you. But for trend analysis, updates would be turned off, so each tick could be seen.

Lanacom's Headliner is the first of the controlled push products to make the transition to true push. It has done so by integrating the Tibco, Inc.'s Rendezvous Information Bus Software engine with its server.

I worked with Headliner — the beta release of Headliner Professional — and the prebeta release of the Enterprise and Workgroup editions. No delivery date has been set for the Professional and Workgroup editions.

The Enterprise and Workgroup editions incorporate the Tibco technology and are impressive true push releases.

The difference between controlled push — sometimes thought of as polling — and true push is easy to see: True push features reduced bandwidth requirements and gives immediacy to updated content.

Headliner stands out by its displays of information. It features standard, full-screen screen-saver displays that disappear with a keystroke, a smaller ticker display and clever ticker usage of the title

gling the display from Web view to text was easy during this process. After marking all such headlines, filtering and alert rules are entered. Matching entries are then discarded or promoted to special actions upon reception.

Some channels included by Lanacom have special features incorporated. Those features show up if you highlight Headliner's Manager, then right-click your mouse button and select properties. For example, selecting the properties of a stock price channel could let you set alerts when a stock reaches arbitrarily defined limits.

The Workgroup release builds on Lanacom's current consumer-oriented release, which lets users subscribe to any of 700 channels. In the Workgroup release, the manager of the server can restrict access to those channels.

The Workgroup manager also defines to which group or groups a member of a workgroup belongs, defining which channels they can access.

Some of the true push features of the



Product: Incisa

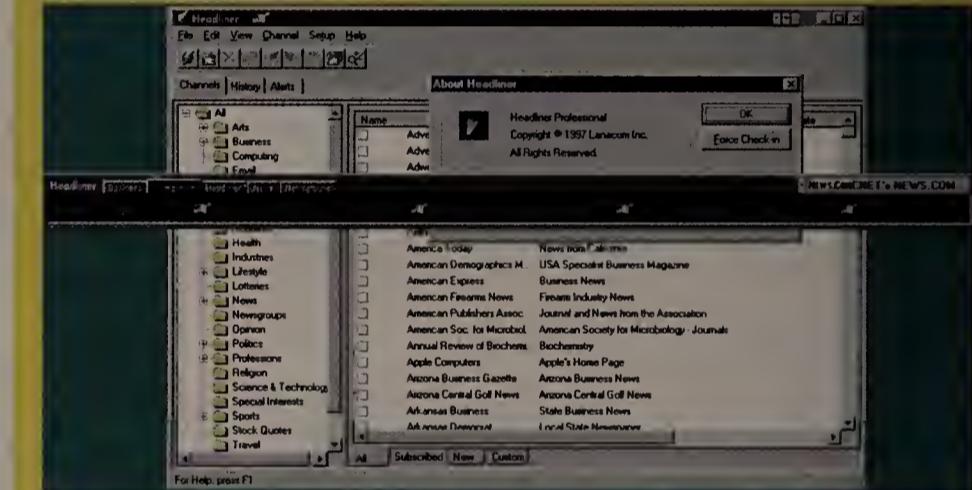
Company: Wayfarer Communications in Mountain View, Calif.

Web site: www.wayfarer.com

PROS: Easy setup and delivery of sophisticated presentation "teasers," mature true push product, easy channel creation, good filter and gateway mechanisms

CONS: Full incorporation of external data sources is cumbersome

PRICE: Server license: 100 concurrent users, \$5,000, plus \$3,300 per year; 1,000 concurrent users, \$25,000, plus \$14,100 per year



Product: Headliner Professional, Enterprise and Workgroup editions

Company: Lanacom in Toronto

Web site: www.lanacom.com

PROS: Deep channel selection, multiple-display capability, easy setup, great filter capabilities, easy channel creation

CONS: When display is active, there is a modest performance hit

PRICE: Headliner, free; Headliner Professional, \$50 to \$69.95 per user;

out as required. The first Databridge license is included in the package; additional licenses are available for a \$2,500 onetime fee, plus \$450 per year.

Each item for delivery is generally composed of two parts. First is the "alert" — an eye-catching, Macromedia, Inc. Shockwave-based "movie." It's really just a teaser that is displayed in a small stand-alone window on a subscriber's screen. When a user clicks on an active area of the teaser — the optional second part of the alert — a uniform resource locator (URL) displayed on the browser is activated. It can be static data — a simple World Wide Web page, perhaps — or it can be more dynamic, based on information from alternate feeds.

Such feeds might include news, stock updates or other timely standard infor-

Customer data can be extracted from databases or real-time acquisition hardware by using standard desktop or automated query tools such as SQL database triggers or fully programmed applications. Extracted data is placed in a simple database that is scanned periodically by the Incisa engine. Each entry causes individual messages to be sent to the server. They are filtered and distributed to interested subscribers as defined by the server administrator. It sounds more than a little clunky — and it is — but it works well once you get used to it. Wayfarer's Incisa shows surprising maturity for a new company and new product in a relatively new field. Wayfarer seems to have addressed many of the problems of true push, such as group administration and corporate database interfaces.

bar of the active window.

But the title bar ticker takes some getting used to: The active window's ticker roams as a user switches windows, and finding the ticker is difficult at first. It uses barely any space on the screen, though, which makes it great to use on busy screens.

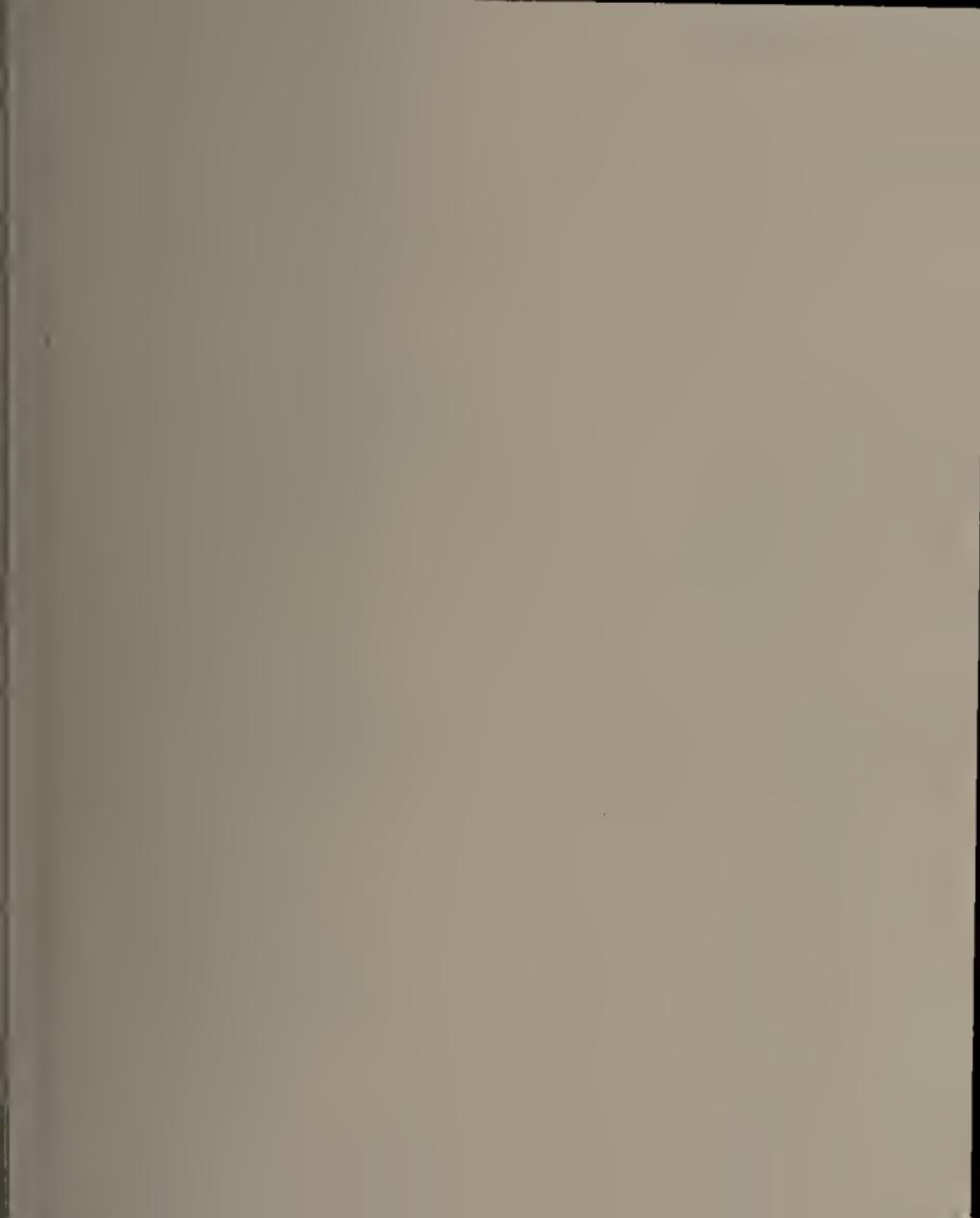
Headliner's local client checks channel content on a scheduled basis for changes, taking any of a variety of actions from simple alerts to full site downloads.

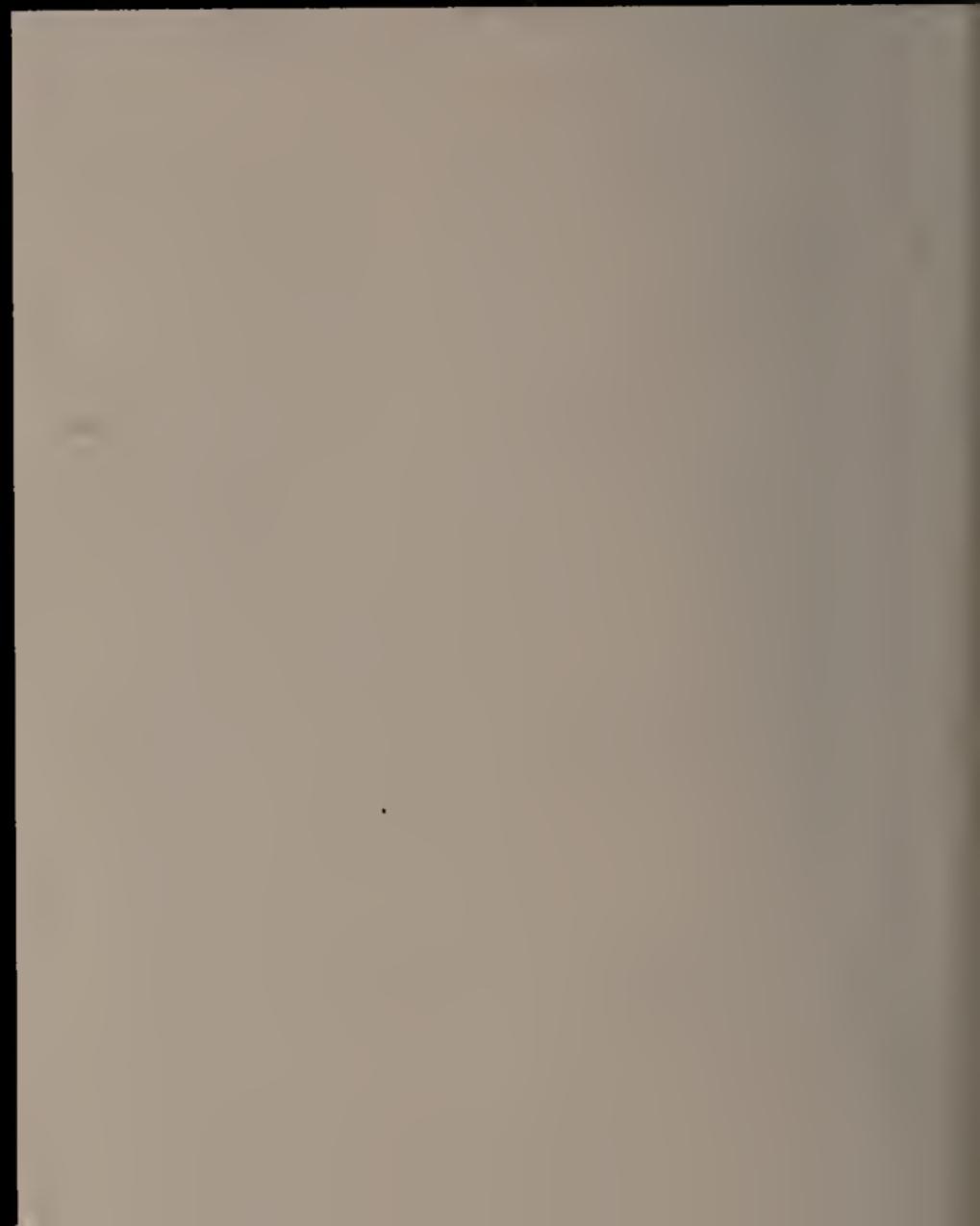
Users and administrators can add and control new channels easily. After naming the channel and categorizing it, the affiliated Web site is entered and then downloaded. Each change in a Hypertext Markup Language tag is noted on a display, and the first variable area that can be considered a headline is flagged. Tog-

newest Workgroup release include moving the above-mentioned administrative tasks to the server, letting the server do the scheduled polling of each channel to determine if content has changed and applying both server-based filtering and alert rules as applicable.

Items that pass such muster are added to the server's database. Those items are then pushed to waiting subscribed group members' clients, where further individual filtering and alert rules can be applied. Finally, qualified items are added to the client's local database and displayed as appropriate, giving dual filtering of channel changes. □

Greenberg is a software developer and reviewer in New Kingston, N.Y. He can be reached at greenber@ramnet.com.





In Depth

A New Page

McGraw-Hill
has seen the
future of
publishing —
and it hinges
on
information
technology



PHOTOS BY RAFAEL FUCHS

mcGraw-Hill President Joseph L. Dionne presents a bold vision for his company, loaded with references to real-time information feeds, online databases, electronic publishing, computer gateways and international satellite links.

But Dionne never once mentions the Internet or the World Wide Web in his keynote address. Reason: He gave this speech 14 years ago, and for the commercial world, the Internet did not exist.

Dionne, now 63 and chairman and CEO of The McGraw-Hill Cos. in New York, still views the company's future in technological terms. But today, the Internet, intranets and the Web are part of his vision. In fact, they're at the heart of it.

"In the end, what this is about is collaboration, and networks enable collaboration," Dionne says. That collaboration is unfolding on multiple fronts at McGraw-Hill, and it's fundamentally changing the way the 109-

year-old company works internally and how its customers view it. McGraw-Hill uses internet-working technology to share information across its autonomous business units and bring customers into its databases. Managers say this is reducing costs, speeding product delivery and making the company more responsive to

the unique needs of each customer.

The \$3 billion publishing and information services company earlier this year unveiled a corporate intranet, and it recently shipped to employees 10,000 copies of Netscape Communications Corp.'s Navigator 3.0.

The intranet is intended to offer employees convenient and cost-effective access to basic information such as the employee handbook and executive memos. But its most important role by far is to chip away at

BY GARY H.
ANTHES

A new page, page 78

A New Page

CONTINUED FROM PAGE 77

the vertical "silos" of information held by the company's 40 autonomous business units.

"We want a big house, not a collection of bungalows," says Jack Goodman, senior director of corporate communications. "That's a Joe Dionne concept. He was way ahead of his time, but now his vision is enabled by technology."

"McGraw-Hill is looking for ways to build relationships with their customers and increase the value of their information by increasing the frequency of its use," says Rudolf A. Hokanson, an analyst at Deutsche Morgan Grenfell in New York. "The company is putting into practice what a lot of the Information Age experts are saying — that you can be overwhelmed with information, so you have to make your information something that really adds value."

DESIGN YOUR OWN

Networking technology is facilitating customer collaboration at McGraw-Hill's Primis unit, a just-in-time publishing service for college professors. Primis allows instructors to design their own books by selecting items from a huge database of textbooks, journals, laboratory manuals, case studies and historical documents. It can reduce to a few days a process that once required weeks or months.

Benjamin Forest, a visiting lecturer at the University of Illinois at Chicago, used Primis recently to build a book for his undergraduate course in sociology. He selected articles, essays and other items from the Primis Web site and E-mailed his choices to Primis. A week later he had a draft book in his hands.

Ten days after receiving the instructor's approval, Primis shipped to the campus bookstore 200 copies of a bound, 328-page text printed on an IBM digital press. "The big savings is students don't buy anything they are not going to read," Forest says. "And it's very flexible; I can easily change topics from semester to semester."

KNOW THY CUSTOMER

Giving customers such as Forest access to McGraw-Hill databases means the company must sharpen its understanding of what those customers do with information, Dionne says. "The more we understand the customer's value-added, the more indispensable we can be to their business."

For example, McGraw-Hill's Tower Group International, which helps com-

panies manage and track their imports and exports, directly adds value to customer information. It takes customers' product dictionaries and tags items with federal regulatory information such as import quotas and U.S. Food and Drug Administration restrictions.

"We maintain data on their computers, and they maintain data on ours," says Tower Group President Bob Mooney. "An intranet can eliminate some of the physical barriers."

At a GLANCE

McGraw-Hill is a publishing and information services company. Major lines of business include:

- I Standard & Poor's financial information and rating services
- I Education and professional publishing
- I Broadcasting and magazine publishing — *Business Week, Byte and others*
- I Information services — Datapro, National Software Testing Laboratories and others

1996 FINANCIAL HIGHLIGHTS

Operating revenue

Educational and professional publishing:	\$1,278M
Financial services:	\$856M
Information and media services:	\$942M
Total:	\$3,076M
Operating profit:	\$531M
Employees at year's end:	16,220

Tower Group and Federal Express Corp. jointly developed an import tracking system used by Tower, FedEx and the U.S. Customs Service. It has eliminated a flood of paper and essentially erased boundaries that separate the organizations.

Installed at FedEx's new international hub in Indianapolis, the document-imaging system can tell Customs what's in FedEx shipments while an incoming plane is still in the air, then track that cargo through the Customs clearing process.

FedEx officials praise the system and the teamwork that produced it. And the Customs Service hails the innovation that allowed government and industry to jointly use an application. "This is very much outside-of-the-box thinking," says Clint Littlefield, who heads up cargo processing in the region that includes Indianapolis.

"The more sophisticated companies are constantly looking at streamlining their business processes, and we wind up literally integrating our systems with theirs," Mooney says. "Looking at how we can use the intranet internally has caused us to rethink how we provide data to our customers."

Some of the electronic paths from Mc-

Graw-Hill go to individuals, not businesses. In September, Standard & Poor's will launch a consumer investor service aimed at helping investors manage their stock portfolios. It will combine information from a number of S&P business units, *Business Week* magazine and possibly other McGraw-Hill businesses.

One of the toughest challenges in establishing such close links with customers is knowing just how to protect the confidentiality of their information, says Neal Allen, a spokesman for McGraw-Hill. "We take the privacy issue very seriously, and it is not an easy issue," he says. "It's something on which we have drawn in many, many people."

Indeed, last week, McGraw-Hill released a comprehensive policy statement that explains just how it will protect confidential data. The statement includes details such as who at the company may access customers' Social Security numbers, what data is to be encrypted and what kind of encryption is to be used.

DIRECT ACCESS

The S&P Platt's unit of McGraw-Hill provides real-time market intelligence and pricing for commodities traders in energy, chemicals and metals markets worldwide. Platt's 16,000 subscribers can use the Internet to tap directly into its databases of prices, transactions and news to watch oil flows worth \$1 billion per day.

And a few oil companies have established even tighter links with Platt's. Conoco, Inc.'s intranet home page gets a feed of Platt's oil news and prices. That information, now available to more than 10,000 Conoco employees, allows the company to avoid "tons of paper subscriptions," says Kevin Carpenter, manager of commercial support for crude oil supply and trading at the company in Houston.

According to Carpenter, Conoco traders no longer have to come to his group for help doing historical analyses of oil prices. "This gives all those users at our refineries the data directly to put into their systems. They can do trend analyses every day now," he says.

Thus enabled by internetworking technology, data flows from editors at McGraw-Hill to end users at Conoco with little or no intervention by information systems staffs at either company. Such seamless connection of information producers and consumers is a lynchpin of McGraw-Hill's information systems strategy, and it's beginning to fulfill the vision outlined by the company's chairman 14 years ago. □

Anthes is Computerworld's senior editor, special reports. His Internet address is gary_anthes@cw.com.

From the CIO

Three years ago, senior managers in each of McGraw-Hill's 40 independent business units held three-day planning sessions to draw up an IS road map for the company. According to Chief Information Officer John Kerin, the groups were unanimous in concluding that the company lacked four things: technology leadership, corporate technology standards, shared services such as electronic mail and enterprise-wide sharing of information.

One result of the meetings was the creation of a corporate IS infrastructure that's beginning to link the firm's information silos via a worldwide network and corporate IS standards.

At the time of the meetings, McGraw-Hill had 185 independent LANs, each with one of 13 different E-mail systems and each with its own employee direc-

tory. Since then, it has linked the LANs into a TCP/IP WAN, distributed 10,000 Internet/intranet browsers, set up a central online employee directory and standardized on an E-mail package.

Kerin says building the infrastructure was just the first phase — the tactical work — needed to get McGraw-Hill ready for the 21st century. The next job is to address strategic matters, especially technology leadership.

This summer, Kerin will kick off a management development program for the company's 40 IS vice presidents. The program will focus on business skills such as planning, feasibility studies, cost/benefit analyses and risk assessments.

As technology increasingly breaks the barriers between IS and external customers, IS managers must reinvent themselves, Kerin says. "My number one objective for the next three to five years is to develop a cadre of business-oriented IS executives," he says.

Kerin has twice ventured outside of IS to take management stints in operating units of McGraw-Hill, where he oversaw worldwide book distribution and editorial production in addition to IS. He says that experience has brought him invaluable credibility and know-how when dealing with other McGraw-Hill managers.

Kerin says he hopes that one day all his IS vice presidents will be able to work in one of McGraw-Hill's mainstream operations.

— Gary H. Anthes



EXERCISING ALL YOUR MIPS?

Millennium does.

Many mainframe purchases are based on Total MIPS — but Productive MIPS are the real test of value.

Consider the Amdahl Millennium™ family of CMOS-based servers — S/390® compatible mainframes that deliver more Productive MIPS per dollar than any other CMOS-based server. Bar none.

Millennium's extraordinary value derives from its uniquely muscular architecture. Unmatched caching with up to 30 times more capacity for optimum processor utilization. Flexible partitioning for load-matched resource allocation.

Plus many more innovations to keep MIPS hard at work on the mission-critical workloads of your business.

Interested in servers with a stronger work ethic?

Talk to Amdahl.

Call for free white paper on Performance vs. Capacity. Contact us at (500) 223-2215 or www.amdahl.com

amdahl

amdahl
BRING US YOUR HARD PROBLEMS™

IT Careers

PILLARS of the COMMUNITY

When IS managers let their employees take public service sabbaticals, they get leaders in return

By Kathleen Melymuka

Jose Espinoza is a software engineer at Xerox Corp., but last year his job description was a little hard to pin down.

Espinoza worked at the Even Start Family Literacy Program in his East Palo Alto, Calif., neighborhood. His tasks ranged from teaching computer literacy to helping people with drug and delinquency problems.

As a volunteer in Xerox's Social Service Leave Program, Espinoza did a little of everything. He stretched his technical muscles by networking and programming in the previously unfamiliar Macintosh environment. He enhanced his leadership skills through teaching and counseling. Coping with the complex and conflicting demands of an underfunded nonprofit honed his organizational and managerial talents. And his heart got a workout, as well.



If ever there was a "win-win-win" situation, the sabbatical is it. And information systems employees, with their special skills, make particularly compelling candidates. Consider the following:

- ♦ Communities win the extended, free services of highly skilled, highly committed workers.
- ♦ Volunteers get a refreshing break while stretching their technical talents and enhancing their leadership and management skills.
- ♦ Companies win praise for public service. And to sweeten the pot, they can often deduct program costs as charitable contributions.

"The program allows us to put our arms around the community and increase the bank's visibility," says Kathleen Lucier, an executive vice president of administration for the Southwest retail region at Wells Fargo. "As a manager, I value volunteerism highly. Volunteers are leaders, decision-makers, motivators and organizers — all qualities vital to job performance," she says.

SAP
WORLDWIDE IMPLEMENTATIONS
ALL MODULES
FUNCTIONAL CONFIGURATION ABAP BASIS
POSITIONS THROUGHOUT THE U.S. AND ABROAD
1975 North Park Place Atlanta, GA 30339
800-599-9550
770-955-1714
FAX: 770-937-0423
e-mail: slc11@aol.com
EOE, MEMBER NACC

STRUCTURED LOGIC COMPANY, INC.
SAP NATIONAL Implementation Division

Software Engineers Needed

Positions Available Throughout the U.S.

Plainsboro, NJ
Embedded SW, Real-Time OS, Assembly; or
Visual C++, Windows NT, SQL Server.
Melbourne, FL

SCADA, Unix, C, Power Applications.

BRI, a computer consulting company employing a large number of computer professionals, has multiple positions available for experienced software engineers to design, develop, test and implement computer software systems. Min. requirements: B.S. or equivalent in Computer Science or Engineering + 2 years experience in that capacity. Utilization of the above skill sets a plus. Possible relocation. Salary 40K-49K DOE. Please forward resume to: Recruiting Manager, 4354 S. Sherwood Forest Blvd. Suite 175 Baton Rouge, Louisiana, 70816.

BATON ROUGE INTERNATIONAL, INC.
The Global Information Technology Company

System Engr, Utilities Application Bachelor's/equiv in Comp Sci or Engg & 1 yr exp in job or 1 yr exp in 2 of the following: C, C++, Pascal, FORTRAN, ODL or DL in Windows or UNIX. Will need Master's/equiv & proficiency in 2 of these languages. Must have proof of US work authorization. Will develop automated mapping/facilities mgmt/geog info systems (AM/FM/GIS) rulebased utility model for utility customers using FRAMME (Facilities based Application Model Environment), Visual Basic, Visual C++ & Oracle; program in C/C++ Development Language (DL), Microstation Development language (MDL), Visual Basic & Visual C++ & Structured Query language (SQL); develop & implement Graphical User Interface (GUI); perform DBA; perform tuning & documentation; and sent projects using Microsoft Word, Excel, & PowerPoint. \$6,400/yr., 7:15-4:15/wk. To apply to Marilyn Thomas, Job Order AL6065362 Alabama State Employment Service, 2535 Turkman Dr., Huntsville, AL 35825. EOE

Three Software Engineers sought to analyze business problems, create program specifications, construct programs, and test programs specifically for a UNIX client-server environment. Responsible for performance tuning, development of time estimates, creating test plans, and creating program and system documentation. Requirements: Bachelor degree in Computer Science, Engineering, or a related field plus 3 years experience in the job offered or in systems analysis or software development. Such experience must include: strong database background; demonstrated knowledge of SYBASE and its utilities and ORACLE and its utilities; work in a client-server environment; UNIX Shell Programming, C language; workstation running UNIX and/or DOS/Windows. Hours: M-F, 8-5; 40 hrs/wk. Salary \$60,000/yr. Must be willing to travel to various client sites throughout the U.S. If interested please send two resumes to Case #70460, PO Box #8968, Boston, MA 02114.

If you're an
SAP Wizard,
and you're ready for the challenge of
implementing bigger and better SAP solutions,
DIGITAL is ready for you.

Face the facts. Only one company provides you with the chance to work on the most state-of-the-art, Alpha-powered version of SAP the industry has ever seen — DIGITAL. But what would you expect from the company that's developing the world's best computing solutions and bringing the future of enterprise computing into the next millennium and beyond? At every turn, we offer unmatched opportunities to deliver the most exciting solutions in 64-bit technology, Networks, UNIX, Windows NT and the Internet. We currently have full-time employment opportunities for creative thinking SAP professionals who embrace the challenges that come with supporting the most powerful platforms in the industry: Microsoft Exchange, Microsoft BackOffice, Windows NT, UNIX and OpenVMS. Here, you'll find some of the brightest minds in the business not only dedicated to their work, but enjoying the benefits DIGITAL provides its people — like access to one of the largest installed bases on the planet; best-in-class hardware/tools; continuous training; and the opportunity to work at the forefront of cutting-edge SAP technology, giving you the edge you need to stay competitive. So, when you're ready to work with the best, remember, there's only one name to call: DIGITAL.

SAP Opportunities

We have been successful in hitting all of our implementation milestones as we continue to install SAP into DIGITAL's worldwide infrastructure. To ensure that we keep up our momentum, we are looking for the following SAP professionals to join our team throughout Eastern Massachusetts:

- **SAP R/3 Configurators - All Modules**
- **SAP R/3 Architecture Developers**
- **SAP R/3 Basis**
- **ABAP Programmers**
- **EDI, ALE Engineers**
- **SAP R/3 Operations Manager**
- **SAP R/3 Trainers/Managers**
- **SAP R/3 Program and Project Managers**
- **SAP R/3 Management Reporting**
- **SAP R/3 Qualification and Testing**

The above opportunities require only limited travel, so if you're tired of the endless travel often associated with an SAP career, DIGITAL is ready for you.

www.digital.com/info/careers

DIGITAL offers competitive salaries and full benefits. Please send resumes to: Digital Equipment Corporation, Attn: SAP Recruitment Office, 50 Nagog Park, MS-AK02-2D5, Acton, MA 01720. Fax: 508-264-5924 or e-mail: SAPRecruitment@mail.dec.com We are an Equal Employment Opportunity employer.

digital
Whatever it takes.™

© Copyright Digital Equipment Corporation, 1997. Whatever It Takes is a service mark of Digital Equipment Corp. Trademarks appearing herein are the property of their respective owners.

Free Resumé Distribution

Since 1994, over 20,000 experienced computer professionals have used Skill Scan to promote their skills. By submitting your resumé you will reach over 100 of the nation's top agencies/consulting firms as part of our weekly CD-ROM database (and it's free!).

Submit your resumé today to:
Fax: (800) 369-4067
or resource@in.net

www.skillscan.com

**SAP**

We specialize in:
The placement of SAP professionals - all modules, ABAP, BASIS

Contract & Permanent Positions Available Nationwide

We have low overhead so we can pay you top rates

People Unlimited
1811 Sards Rd N, Ste 210
Charlotte NC 28270
Phone 704-841-1135
Fax 704-845-1052

Technology Positions
School District of Philadelphia

Visit our Web Site
<http://www.phila.k12.pa.us>

Director, Instructional Technology

Chief Network Engineer

Data Security Administration

Programmer/Analyst (Scientific). 40 hrs/wk. 9am to 6pm. \$40,000/yr. Design Realtime Applications on OS-9 Operating System. Design/Upgrade Data Acquisition System of Seismic Data in VME bus. Develop Communication Software on Windows NT. Min reqs: MS in Computer Science. 1 year in carrying out those duties set forth in the job offered or 1 year in design of data acquisition system of seismic data (to include therein 1/2 year in processing of seismic data). Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. JO#TX7857644 Ad Paid by an Equal Opportunity Employer



PILLARS of the COMMUNITY

CONTINUED FROM PAGE 80

"I learned that it's easy for people to undervalue themselves," Espinoza says. "It's easy to think no one cares. But everybody's story matters."

Xerox, Wells Fargo & Co. and American Express Co. have bought in to the idea that every-

body's story matters. They're helping their employees make a difference by offering company-wide programs of extended, fully paid leaves for volunteer work. □

Melymuka is a freelance writer in Duxbury, Mass.

PAM HOLLEY



COMPANY: Wells Fargo, San Francisco

POSITION: Vice president, systems manager

YEARS AT COMPANY: 18

SABBATICAL PLANS: For six months in 1983, Holley worked at Children's Hospital in Oakland, Calif., developing a sickle-cell anemia-related database. For three months in 1993, she developed a database that analyzes sickle-cell study findings for use in grant applications.

REASON FOR APPLYING: "My daughter was born with sickle-cell anemia. The leave gave me the opportunity to find out more about the disease while giving back by developing a database to organize all the sickle-cell data."

SABBATICAL REALITY: "I did extra stuff, mostly fund raising for Children's Hospital. I just got on the phone and persuaded people to give me money. I got a list of big corporations and called them all to see if they would donate for the yearly camp for kids."

CAREER BENEFITS: "It was a PC-related database, and that was fairly new back in 1983, so just designing it enhanced my skills. I taught myself to do it, so it gave me confidence, too. I also [did] fund raising on the side, which I didn't think I could do. It definitely improved communications skills that I've been timid about."

SUMMARY: "We take what we do at work for granted, but when I went there it was rewarding to know my skills would help. In fact, Children's [Hospital] wanted to hire me, but I like it here at Wells Fargo. And now I'm in management, which was where I wanted to be."

ART BARNETT



COMPANY: American Express, New York

POSITION: Project leader

YEARS AT COMPANY: 11

SABBATICAL PLAN: For six months this year, Barnett developed a World Wide Web site for NetDay 2000, a national effort to get schools on the Internet. He also established a New York-based arm of NetDay called NYConnects and managed a team that developed a database used to help match the skills of volunteers with school needs.

REASON FOR APPLYING: "To be a good citizen of the community, to ensure that students are provided the opportunity to keep up with technology and to broaden my skills in another type of work environment."

SABBATICAL REALITY: "I'm doing more than I anticipated. There's a lot of coordination and education that needs to be done in nonprofit organizations."

CAREER BENEFITS: "I developed my skills above my expectations in a lot of areas, especially in leadership. I needed to take a leadership role and say, 'This is what we need to do.' I got exposed to a lot of different management styles [so] I've learned to adapt my leadership behaviors for different groups. I've [also] gained ample skills in Web design and management and have used my skills in LAN infrastructure."

SUMMARY: "The best thing is that, maybe not today, but in the long term, I've provided some schools and children with the opportunity to access technology."

JOSE ESPINOZA



COMPANY: Xerox, Palo Alto, Calif.

POSITION: Software engineer

YEARS AT COMPANY: 12

SABBATICAL PLAN: For six months last year, Espinoza taught computer literacy at the Even Start Family Literacy Program in East Palo Alto.

REASON FOR APPLYING: "It was an opportunity to work with people in my own neighborhood. There may be more brilliant Mac programmers out there, but I'm from the culture. People are much more complicated to deal with. Technology is easy."

SABBATICAL REALITY: He taught computer literacy, revived an unused Macintosh lab, hooked into the Internet, computerized school district forms and reports, re-applied for a federal grant, developed close ties with community parents and children, and drove a van.

CAREER BENEFITS: "I had to learn about Macs, [and] I learned that I have the ability to stay calm in a crisis. That helped me as a developer. I also learned how important it is to encourage people who appear to be not confident in themselves. Somewhere along the line, that's going to help me a lot."

@ COMPUTERWORLD

Project management skills are hot. Training expert Lina Fafard's advice on how to get 'em and flaunt 'em is at our Web site: www.computerworld.com/careers.

IT CAREERS INDEX

The hiring pace for IS professionals is rapidly accelerating heading into the summer. Three-month hiring projections for permanent staff rose 5% from last month, while 12-month projections showed a 12% increase.

	Within 3 months		Within 12 months	
	Permanent	Temporary	Permanent	Temporary
Percentage change in IS staff	3%	15.6%	3.3%	NA
Percentage of managers increasing staff	25.2%	11%	34%	7%
Percentage of managers decreasing staff	NA	NA	4%	5.2%
Percentage of managers maintaining staff levels	NA	NA	62%	87.8%

Current staff mix

Permanent 94.2%

Temporary 5.8%

Consultant, 40 hrs/wk, 9am-5pm. \$45,000/yr. Design, develop, implement & test software for management information systems. Software management encompassing all phases of system development life cycle. Technical training & support. Tools: AS/400 & utilities; RPG/400; SQL/400; OS/400; BPCS, AS/SET; CL/400. B.S. in Computer Science as well as 2 yrs. in job offered or as a Programmer or Systems Analyst required. Prev. exp. must include: BPCS; AS/400; RPG/400, AS/SET. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605. Attention: Leonard Boksa, Reference #V-IL-16492-M. NO CALLS. An Employer Paid Ad.

Oracle Programmers/Analysts (4)
\$300 Million Div. of Fortune 100 Co. Manufacturer of CD, CD Rom & Video Disc Multi-Site Operations UNIX Client Server Envir. Reqs. Min. 3-5 yrs exp w/ Oracle Applications Development preferably Discover/Developer 2000 or similar ie Power Builder etc PA Location To \$80K base+ bonus commensurate w/ Exp Reply to Search Firm
A.D. Check Associates, Inc.
Fax: 717-820-8293

Computer Jobs... Lots of 'um.
<http://www.selectjobs.com>
If you must...
954-424-0563



Why Not Shape The Future? And Live Well In The Present.

The Telecom Corridor® in Richardson, just outside of Dallas, is home to more than 500 high technology companies. The above companies are engaged in a collaborative effort to recruit technology professionals to the Dallas area.

The high concentration of leading companies is causing a phenomenal increase in job opportunities. The Corridor needs to fill more

**IT PROFESSIONALS
MIS PROFESSIONALS
SYSTEMS ANALYSTS**

**SYSTEMS ENGINEERS
ELECTRICAL DESIGN
ENGINEERS**

**HARDWARE ENGINEERS
SOFTWARE DEVELOPMENT
ENGINEERS**

To learn more about the region and the participating companies, visit our website and complete an application. This process will **confidentially** match you with current and future openings offered by these companies. See our website: www.corridorcarrer.com. If you do not have access to the Internet, FAX your resume to 972-480-0348, e-mail: mjohn@questmatch.com

If you'd like to know more about how you can live even better in the present and continue to shape the future, visit us at:



www.corridorcarrer.com

- ▲ NO STATE INCOME TAX
- ▲ LOW COST OF LIVING
- ▲ QUALITY EDUCATION
- ▲ 500+ TECHNOLOGY COMPANIES IN THE TELECOM CORRIDOR

For more information visit our website.

a service of
Q M QUESTMATCH

**WHERE DO YOU WANT
TO WORK TOMORROW?
SOFTWARE & IT
OPPORTUNITIES NATIONWIDE**

Contract Solutions has over 17 years experience in the placement for Software and IT Contract Professionals. Our relationship with leading technology companies means **MORE** career choices for YOU!

Due to our client demand, we have **IMMEDIATE** opportunities for individuals with the following skills:

- (HP-UX/Solaris) System Admin
- AS/400, RPG
- C++, Object Oriented Technologies
- SAP
- IDMS/ADSO
- Unisys A-Series, COBOL
- Mainframe / Insurance Experience

HOT OPENINGS

MAINFRAME SYSTEMS WORK

YEAR 2000 CONVERSION PROJECTS

Contract SOLUTIONS.
Matching Talent to Technology

2 Keewaydin Drive, Salem, NH 03079
800-998-2741 603-893-6776
Fax: 603-893-4208
e-mail: cworld@consolgroup.com

Applications Developer, 40 hrs/wk, 9am - 5pm. \$40,000/yr. Development proprietary end-user decision making software in a client/server environment. Graphical user interface (GUI) development. Develop back-end server software. Tools: C; Pro*C; Visual Basic; ORACLE 7.0; PL/SQL; UNIX; HP-UX; Korn Shell; MS Windows. B.S. in Computer Science, Elec. Engrg., Math or Physics as well as 6 mos. in job offered or as a Software Consultant required. Prev. education or exp. must include: ORACLE; Pro*C; Visual Basic; PL/SQL; UNIX; Korn Shell; MS Windows. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605. Attention: Leonard Boksa, Reference #V-IL-17373-B. NO CALLS. An Employer Paid Ad.

Twenty Senior Programmer/Analysts sought to work on the analysis, design, development, testing, implementation, and revisions of management information system applications in a client server environment. Also responsible for future enhancements and maintenance of the applications. Requirements: Master of Science degree or Bachelor of Science degree plus 2 years MIS experience. The degree must be in Computer Science, Engineering or a related field. Education or experience must include: client/server (object oriented) environment, PowerBuilder/PowerScript, RDBMS (Oracle or Sybase), and object oriented programming principles. Hours: M-F, 8-5, 40 hrs/wk. Salary \$50,000/yr. Must be willing to travel to various client sites throughout the U.S. If interested please send two resumes to Case #70581, PO Box #8968, Boston, MA 02114.

USAA
Named One of the Top
10 Companies to work
for in the United States.

Please forward
resume to: USAA,
9800 Fredericksburg
Rd., San Antonio, TX
78288-0055, Attn:
Employment,
C/SV/E. FAX (210)
498-1489.
E-mail:
kuwamura@usaa.com
Resumes only, please.
Reference # 888-7777,
AMK.



EOE. M/F/D/V.

Development Toward the Future



USAA, the premier personal lines insurance and financial services company, is seeking full-time Information Technology professionals to join our 2,000+ Information Services team committed to excellent quality and service to our members. Located in the great city of San Antonio, Texas, we are centrally located with easy access to the Riverwalk, the Alamo, Fiesta Texas, Sea World and other exciting sites.

As one of the top 10 companies to work for in the United States, we offer an extraordinary 4-day work week, casual business dress code, tuition reimbursement, competitive salary and an outstanding benefits and relocation package.

Immediate opportunities include:

- Systems Programmers (UNIX, AS400, RS6000)
- Data Base Consultants (Oracle, Tandem, DB2, IMS, SQL-server)
- Client-Server (C, C++, Visual Basic, TCP/IP, Win NT, Win 95)
- Mainframe (COBOL, MVS, IMS, DB2, CICS, PL/I)
- Internet Developers (Shell, Perl, JAVA, Active X, HTML)
- Systems Analyst

AT CONNECTICUT Natural Gas in Hartford, Jay Agosto has had a job opening since last August for an information systems professional with two to five years of Cobol experience. The job pays up to \$55,000, says Agosto, a human resources representative at the utility. So far, he's had no takers.

Agosto's experience is typical at many Connecticut companies struggling to fill jobs in a place where the demand far exceeds the supply. Sandwiched between the major metropolises of New York and Boston, the scenic, coastal state of Connecticut is on an economic upswing. But employers are struggling to find IS pros with the right combination of skills, particularly in larger cities such as Stamford, New Haven and Hartford. Here's a look at the job market in each.

BY LYNN HABER

damned YANKEES

STAMFORD

Pitney Bowes, Inc. vies for the same client/server talent as Hartford and New Haven. But it does so in the more competitive climate of the state's southwestern Fairfield region. Located just outside New York, companies in Fairfield County compete with the city for IS talent.

Client/server job openings at Pitney Bowes fluctuate between 10 and 25 in number, says Mary Tetro, director of staffing at the mailing systems division. "We're also moving to Windows NT and are finding a scarcity of people with NT skills as well," she says.

The company also is having a difficult time filling a position for a network data security manager with eight to 10 years of hands-on network engineering experience for its intranet/Internet environment.

Local hiring managers know IS talent doesn't come cheap. Anyone with three years of client/server experience makes a minimum of \$45,000. Higher-level project managers can make \$75,000 to \$100,000.



Hard-to-find NT-certified job candidates with a Novell background demand \$50,000-plus. But certified network administrators are in good supply and make less than \$45,000.

NEW HAVEN

Sargent Manufacturing Co., a subsidiary of Essex Industries, has two positions open in its IS group of 12 employees. The \$125 million maker of architectural hardware is making the transition from mainframe to client/server computing. According to Jack Dwyer, director of human resources at Sargent, the need for candidates with just the right mix of soft and hard skills adds complexity to the search.

"We're looking for people that know the technology but can also interface with the end users," Dwyer says. One opening at Sargent is for a client/server programmer with Oracle skills. The other is for an IS professional who can work with a client/server project manager to implement new technology. Familiarity with electronic data interchange also is desirable.

Despite the company's tough time in recruiting, it isn't easing up on requirements. Dwyer expects a winning candidate to have three to five years of experience in client/server computing and exposure to the mainframe environment. "We're looking for people with broad views vs. tunnel vision," he says.

REGIONAL SCOPE

Connecticut



Despite hot job openings and salaries, Connecticut IS employers are having a hard time finding talent

HARTFORD

massachusetts Mutual Life Insurance Co. began the year with 150 IS job openings. After a recent merger with Connecticut Mutual Life Insurance Co., the company needed additional IS resources, according to Debra Wojcik, director of staffing. The company is recruiting all levels of expertise in all areas of IS. The heaviest demand is for client/server project managers and developers, and mainframe developers. Job openings exist to a lesser degree in the networking area.

"We've had the most success finding entry-level people that we can train and more experienced job seekers with six-plus years of industry know-how. But finding people in the midrange, with two to six years of IT experience, is the most difficult," Wojcik says. The skills Mass Mutual is looking for: Visual Basic, PowerBuilder, Sybase, Informix, Cobol, CICS, VTAM, Unix and AIX.

Hartford Hospital still supports a mainframe environment, but its future rests with client/server. "We're always trying to bring client/server talent on board, but hires are difficult to find," says Cathy McCarthy, a human resources consultant at the hospital. The hospital has six job openings for people with skills in Visual Basic, Sybase and Oracle. Projects with short deadlines have forced the hospital to seek candidates with three to five years of experience, a group severely short in supply.

The need for mainframe system skills, such as Cobol, CICS and DB2, is acute. Stan Durbin, president of Data Careers, a recruitment firm in Middleton, sees a continual need for mainframe talent. □

Haber is a freelance writer in Norwell, Mass.

AVERAGE IS SALARIES IN CONNECTICUT

CIO/vice president of IS	\$ 127,000
Director of systems development	\$ 85,000
Director of IS operations	\$ 78,000
Senior programmer/analyst	\$ 58,000
Senior systems analyst	\$ 55,000
Programmer/analyst	\$ 45,000
Network administrator	\$ 44,000

Source: Computerworld's 1996 Annual Salary Survey



COMPUTERWORLD

For more on Connecticut's IS job opportunities, salaries and largest employers, visit our Web site at: www.computerworld.com/careers.

IT PROFESSIONALS

New England's largest utility is seeking IT professionals to join our team. As a member of this team, you will be called upon to support a variety of applications in various stages of their system life cycle. We pride ourselves on a strong customer focus while delivering business value through the use of technology. If you are enthusiastic and ready for a challenge, we have the following positions open:

DATABASE- Installation, technical support, DBA on DB2, Sybase and ADABAS systems.

LOTUS NOTES- Vac 1: Technical support and administration. Vac 2: develop corporate-wide knowledge sharing applications.

KNOWLEDGE ANALYST- Focus on developing a cataloging approach and implementing librarian services.

ANALYST/PROGRAMMER- Build and maintain the structure to support the cataloging and storage of information and provide that information through a common interface. Lotus Notes development experience a plus.

SOFTWARE ENGINEERS/COMPUTER SCIENTISTS- To develop and support implementation of enterprise wide 3-Tier architecture based systems to support our Fossil, Hydro and Nuclear generating facilities.

MILLENNIUM TECHNICAL SPECIALIST- Solid background in MVS/ESA systems with some ADABAS and DB2 experience helpful.

DATA ANALYST- Performs logical data modeling, business process modeling, design facilitation, and corporate data management.

ENTRY LEVEL DATA ANALYST- To assist in the performance of logical data modeling, business modeling, design facilitation, and corporate data management.

COMPUTER ANALYST/SCIENTIST- To develop, enhance and maintain mainframe and client/server based financial applications. Experience with Natural, PL/1, COBOL, VB, SQL, and/or DB2 is desired.

COMPUTER ANALYST/SCIENTIST- To support a large, corporate-wide application suite. Experience is required with TSO (IPF, REXX/CLIS TS), JCL, CICS, DB2 (QMF/SPUFI, SOL). Experience with COBOL, ENDEVOR and MS ACCESS is a plus.

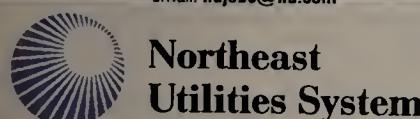
REPORTING ARCHITECT- To develop a reporting architecture and integrate a variety of current reporting tools and environments. Strong interpersonal skills required with experience in Visual Basic, Sybase, DB2, and client/server environment.

ELECTRONIC DOCUMENT MANAGEMENT ARCHITECT- To develop a Document Management architecture and integrate current and planned technologies. Strong interpersonal skills required with experience in Visual Basic, imaging and electronic document management.

COMPUTER SCIENTISTS/ENGINEERS- To develop, enhance and maintain client/server applications and interfaces to mainframe applications. Experience with Visual Basic, Sybase, and MS ACCESS is required. Familiarity with Sybase interfaces to other databases like DB2 and ADABAS is a plus.

For consideration forward your resume indicating position desired and salary history to: Corporate Center, Human Resources, Northeast Utilities System, P.O. Box 270, Hartford, CT 06141.

Email: nujobs@nu.com



Equal opportunity/affirmative action employer M/F/D/V

Visit our website at: www.nu.com

Share Our Vision Of Excellence

Help shape the systems that are shaping the future of health care. Every day, Blue Cross & Blue Shield of Connecticut — an innovator in health care since 1936 — is turning visions into decisions. In the process, we're giving every one of our team members the opportunity to advance their field, their knowledge, and themselves. The following positions are currently available:

SR. TELECOMMUNICATIONS SPECIALIST

Assume Project Leader responsibility for the design/implementation of complex networks and the integration of new technologies. Requires a solid background with DOS, Windows, Novell, IPX and IP, client server technologies, and communications hardware/peripherals such as Hubs, Routers, Token Ring and Ethernet.

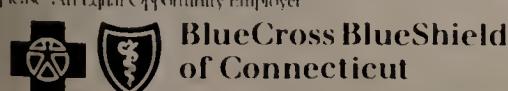
PROGRAMMER ANALYST

Requires 3+ years of Project Leadership in client/server technologies such as VB, DB2 or SQL, Access, and Oracle with MS Windows and Word development.

PROGRAMMER ANALYST

Requires a Bachelor's degree (or certificate), with 2+ years of experience with COBOL, IMS, IBM mainframes, JCL, and TSO (on-line and batch).

In return for your time and talents, each of the above positions offers a fully competitive salary and attractive benefits (including comprehensive health coverage, tuition assistance, flexible spending accounts, and pension and 401(k) plans). Please fax (203) 239-8495, or mail your resume, which must include salary history and indicate position of interest, to: Human Resources Dept-DP, Blue Cross & Blue Shield of Connecticut, 370 Bassett Road, North Haven, CT 06473. Email: DPETERSO@BCBSCT.COM. No phone calls, please. An Equal Opportunity Employer.



Information Systems Programmers



Travelers Property Casualty, now the 4th largest company in its industry, looks forward to another profitable year in 1997. It is not surprising that BUSINESS WEEK cited TPC's chairman, Bob Lipp, as one of the Top Managers of 1996. We are proud to be a member of the Travelers Group, now ranked number 40 on Fortune's 500 list. Our Hartford headquarters provides the opportunity for career growth with over 2000 systems positions supporting multiple businesses across the U.S. In addition to a comprehensive benefits plan, the positions below are both bonus and stock option eligible. We encourage high energy technical professionals to join in our success!

POSITIONS:

Advanced and Senior Level Programmers Project Managers and Senior Level Manager Client/Server Developers

SKILLS INCLUDE:

Tablebase
Assembler
BDAM, VSAM
COBOL
C/C++
OS2
LAN
Netware

Documerge
CICS
DB2
VB 4.0
SQ1
MBasic
Client Server
NT Workstation

Microsoft SMS, Word, Excel
Host Technical Skills (e.g. JCL, TSO)
Computer Telephony Systems
Integration Experience

Interested applicants should mail, fax, or email resume with salary requirements to: Peter Hruska, One Tower Square, 1-PB, Hartford, CT 06183. Fax (860)277-1970. Email: srtichol@travelers.com

Travelers Property Casualty



A Member of *Travelers Group*

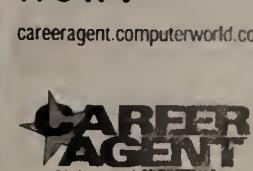
We Are An Equal Opportunity Employer, Committed To Work Force Diversity.
We actively promote a drug-free workplace.

Start your day...

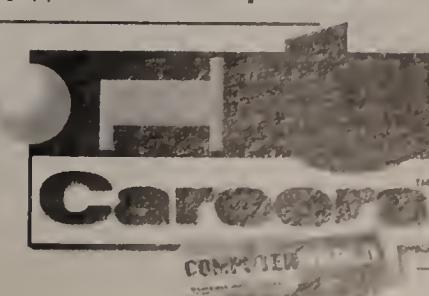


COMPUTERWORLD
The online connection for information technology leaders
www.computerworld.com

Find training now.



<http://careers.computerworld.com>



DON'T LIMIT YOURSELF TO ONE ENVIRONMENT

"Industry sources have indicated that by the year 2000 85% of I.T. Professionals will be consultants."

No one knows better than Howard Systems International that in order to remain valuable and competitive I.T. Professionals must keep moving forward.

At Howard Systems International, our consultants tap the power of technology to meet the assignments of our Fortune 1000 clients. HSI gives their consultants a wealth of information and training to help them achieve. From our educational center, to in-house sponsored courses and tuition reimbursements, our consultants have all the resources to allow them to succeed. If you're ready to contribute to our team-oriented environment, contact Howard Systems today.

MAINFRAME • CLIENT/SERVER

LAN/WAN TECHNOLOGIES • WEB TECHNOLOGIES

Howard Systems International offers salaried, full-time employment with complete benefits and hire hourly contract employees. Opportunities available in Hartford, and New Haven, CT areas as well as Springfield, and Worcester, MA. Interested candidates, please contact:

Howard Systems International, Inc.
10 Waterside Drive, Farmington, CT 06032
tel: 800-736-0204; fax: 860-678-7995;
email: hartford@howardsystems.com

Howard Systems International, Inc.
Soundview Plaza, 1266 East Main St., Stamford, CT 06902
tel: 800-669-6932; fax: 203-348-0531
email: stamford@howardsystems.com

We are an equal opportunity employer M/F/D/V



<http://www.howardsystems.com>

Howard Systems International
Champions of the Information Revolution

HAMILTON STANDARD

Software Design Engineer

United Technologies' Hamilton Standard Division is an aerospace pioneer with a history of innovation and success. We are currently seeking an experienced Software Design Engineer for challenging assignments in our Flight Systems Product area at our Windsor Locks, Connecticut, facility.

This position involves designing embedded avionics and control software using advanced computer systems and languages, including Ada, C and Assembly. Products include Data Management computers, Aircraft Environmental Controls, Air Data computers and Flight Controls. Processors cover the full Intel family, such as 80960, 486, 1750 and proprietary special purpose machines.

Product development at Hamilton Standard follows an orderly and well-established process compliant to DO-178B, DOD-STD-2167A and ISO 9000-3. This methodology is reviewed and revised regularly in response to opportunities for improvement in effectiveness and/or efficiency.

Requirements include a BSCSE, BSCE or BSCS and a minimum of 3-5 years of experience. The successful candidate should be skilled in both assembly and high order languages. Must also be familiar with real time microprocessor software development and modern Software Engineering practices. Object oriented skills are desirable. Knowledge of microprocessor hardware architecture and design is desired.

In addition to challenging work, we offer a strong commitment to career development, a superior Educational Assistance Program and a highly competitive wage and benefits package. Interested and qualified candidates should mail or fax (860) 654-5527 their resume and salary requirements to Professional Recruitment, Department CW, (E-mail: goodman@hsd.utc.com), Hamilton Standard, One Hamilton Road, Windsor Locks, CT 06096. We are an Equal Opportunity Employer. www.hamilton-standard.com



Hamilton Standard

A United Technologies Company

COMPUTERWORLD

FALL Campus Edition

Issue:
October 31, 1997

Advertising Deadline:
September 17, 1997

1-800-343-6474
x8000

UNITED HEALTHCARE

With Revolutionary Ideas, Come Solutions.
Be Part of the Solution.

We are seeking the best and brightest IS professionals to play an integral role in shaping the health care systems that will carry this nation into the 21st century. The following opportunities are currently available in our Hartford, CT location.

IBM Mainframe Development

COBOL, SQL, SAS, CICS, ENDEVOR, VSAM, IMS

Client/Server Development

Powerbuilder, Visual C++, Peoplesoft, Microfocus COBOL, Access, C, SQL

Database Administration/Development/Modeling

DB2, SQL Server, DB2/2, Oracle, Sybase, IMS, IEF, Bachman Tools, System Architect, S-Designer

Telecommunications

Project Managers: Frame Relay, T1, ISDN, SNMP, TCP/IP, IPX, SNA, PBX, Voice Network, Site Design, LAN Management, Call Center Consulting

Technical Services

Windows NT, Novell Netware, UNIX (AIX)

C/UNIX

Mainframe Product Support

Host Applications Testing

Capacity Planning/Storage Tracking

We offer competitive salaries, a comprehensive benefits package, and the chance to be part of something on the cutting edge! Please send your resume to: United HealthCare, 450 Columbus Boulevard, Staffing Programs & Services, 8NB-A, Dept. CW697, Hartford, CT 06115-0450. FAX #: (860) 702-7220. For more information on United HealthCare, visit our homepage at www.unitedhealthcare.com

UNITEDhealthcare SM

We promote a drug-free environment, and are committed to diversity in the workplace. EOE M/F/D/V.



Lotus Notes

Developer

Minimum 2 years' designing, developing, and implementing successful Notes applications. Experience developing Lotus/Domino Version 4.5 applications accessible from both a browser and Notes client. In-depth knowledge of LotusScript and JAVA desirable. (Req. #97-172)

Administrator

Minimum 2 years' systems administration in support of a mid-to-large sized Lotus Notes infrastructure. Experience in installation and configuration of Notes servers, clients, and related infrastructure components; Notes database administration and security. In-depth knowledge of operating systems (95, NT, OS2, Netware) and network topologies desirable. (Req. #97-173)

Netware Engineer

2-4 years' Netware experience in support of mid-to-large sized infrastructure. ONE certification with WAN experience. Responsibilities include Netware Version 4 design, consulting, and installation support. (Req. #97-174)

EC/EDI Technical Analyst

ANSI X12 or UN/EDIFACT, EDI Standards, EDI data communications protocols: Asyne, Bisync, and TCP/IP. Requires message switching and mapping expertise. AIX operations, UNIX, JCL, MV8, Oracle, and TSO. An excellent career opportunity for the right candidate. (Req. #97-009)

Oracle Developer

Solid 1+ years' experience in Oracle Database Version 7, SQ/SQL Plus, Oracle Forms 4.5 or higher required. Knowledge of UNIX, Relational Database, COBOL, C, or Pascal experience desired. (Req. #96-168)

All positions require a Bachelor's Degree (computer science preferred) and strong communication and customer relations skills. If this sounds like the right place to program your career path, please FAX/email your resumes to Joanne Machado at: (860) 496-3603; e-mail: career@torrington.com

TORRINGTON

INGERSOLL-RAND

America's Largest Broad-Line Bearing Manufacturer
We encourage a diverse workplace

If you'd like to find out more about The Torrington Company visit our Web site at: <http://www.torrington.com>

Technology happens.

At The Hartford, our Information Technology Department is setting the standard for leading edge sophistication. Our global performance is centered in advanced technology and it shows. In fact, Computerworld has recognized our Info Tech organization as one of the world's Top 100 users of Information Technology. Join us in making technology happen in one of these career opportunities in our Hartford, Simsbury and Southington locations.

Growth happens.

INTERNAL CONSULTANTS

DATA ARCHITECT

DATA DESIGNER

OBJECT DEVELOPER

SYSTEMS ADMINISTRATOR

LAN/WAN ENGINEERS

SYSTEMS ANALYSTS

INTERNET DEVELOPER

ORACLE DEVELOPERS

COBOL DEVELOPERS

(W/DB2 OR IMS)

WANG PACE PROGRAMMER

Opportunity happens.

We offer an excellent compensation and benefits package. Don't miss this opportunity to explore new horizons with The Hartford. Please forward your resume and salary requirements to: The Hartford, Human Resources, Reference Code: CW6-23, Hartford Plaza, Hartford, CT 06115.

Bring It On.

Please visit our homepage at
<http://www.thehartford.com>
Equal opportunity employer

Information Technology

<http://careers.computerworld.com>

ATTENTION:
IMPLEMENTATION CONSULTANTS • TECHNICAL CONSULTANTS
SENIOR PROJECT MANAGERS • STRATEGIC ACCOUNT MANAGERS

so,

Consider the clients—including more than
3,000 of the world's best.

WHERE'S

Consider the commitment—to provide
"best-of-class" financial software.

YOUR

Consider the challenge—to grow, learn and earn alongside
the most talented software specialists in the industry.

RÉSUMÉ?

Consider the company—Hyperion is rated as a leading "high-growth" company
by Business Week, Forbes and Software Magazine.

Now consider this...we offer competitive compensation, full benefits—including medical/dental and 401(k)—plus exceptional bonus and career growth. Please send/fax/e-mail résumés with salary requirements to:

Hyperion Software Corporation
900 Long Ridge Road
Stamford, CT 06902
Fax: (203) 322-3904
e-mail: lisbeth_burns@hysoft.com

Hyperion
software
www.hysoft.com

Start your day...



COMPUTERWORLD
The online connection for information technology leaders
www.computerworld.com

Find training now.

careeragent.computerworld.com



COMPUTERWORLD
FALL
Campus Edition

Issue:
October 31, 1997
Advertising Deadline:
September 17, 1997

1-800-343-6474, 800

CIGNA ON TECHNOLOGY

You have your own definition of success.
We speak your language.

You want success on your own terms. At CIGNA, we speak your language. With new technologies emerging everyday, we can offer you varied career options and the opportunity to discover the position that's right for you. We'll provide you with a superior technical environment that's leading the industry with 600 LANs in support of 37,000 users. And it doesn't stop there. We offer a network of unlimited growth potential and training opportunities to professionals that are fluent in their field. Opportunities exist in the following areas in Philadelphia, PA, Bloomfield, CT and Voorhees, NJ.

NT Server

- Infrastructure Architecture
- Roll-out and Implementation
- Network/Desktop Support
- Field Office Design and Support

LAN (Windows NT, OS/2 or Novell)

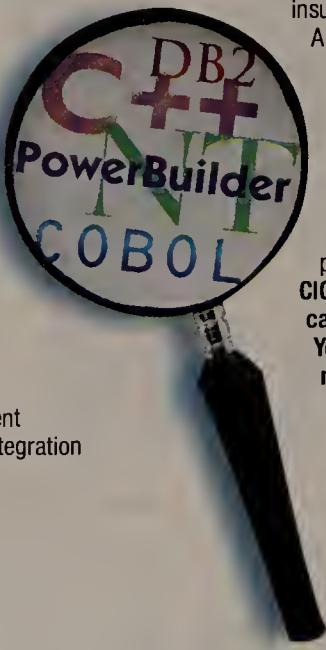
- LAN/WAN Infrastructure Management
- Desktop Hardware and Software Integration
- Level 2 & 3 Problem Resolution

Developers/Analysts/
Designers

- Visual C/C++
- PowerBuilder
- OLE
- MICROFOCUS COBOL
- Visual Basic
- RDBMS

Team Leaders

- NT Operations Support
- NT Technology Officer
- Internet Business Development and Management
- Remote Access Business Development and Management



Mainframe Developers

- COBOL
- CICS
- DB2
- FOCUS

These positions require a minimum of 2+ years' solid technical experience as well as strong customer service, analytical and communication skills in an insurance or financial services environment. A Bachelor's degree in Computer Science or related field and/or applicable certification is preferred. In addition, proven management and business experience is essential for leadership roles.

Communicate with us. We offer a competitive salary and comprehensive benefits package. To speak confidentially to CIGNA about these opportunities, please call Corporate Staffing at (860) 726-6743. You may call 24 hours/day and leave a message with a convenient time for us to contact you. Or you may forward your scannable resume and salary requirements to: CIGNA, Corporate Staffing, Ad # CW-797, 1601 Chestnut Street, PO Box 7728, Philadelphia, PA 19101-9463; or e-mail us at: jobs@cigna.e-mail.com For more information about CIGNA see our home page: <http://www.cigna.com> CIGNA is committed to diversity in the workplace.



CIGNA
A Business of Caring

EXPERTS NEEDED

JAVA, INTERNET, INTRANET, OOP, OOA/D,
DISTRIBUTED COMPUTING, CGI, NSAPI, ISAPI*...

* Noblestar is a fully Buzz-word compliant corporation.)

Our goal is simple...to deliver rapid, innovative business solutions utilizing the latest proven technologies. Noblestar specializes in developing Object-Oriented, Internet-based and Distributed Client/Server systems. Our work reflects the creativity, integrity, and inherent value of our services.

Noblestar's high-tech, disciplined environment has established us as a premiere professional services firm. We encourage and facilitate technical training/certification of all employees. We work with employees to nurture and refine their talents, not use them up.

Noblestar Northeast (NJ/NY/CT) has many opportunities for Senior Technical business analysts and Software Engineers.

TECHNICAL BUSINESS ANALYSTS

Must have excellent RDBMS skills, data modeling, db design, 2+ yrs GUI development (PB, VB, C++), OOA/D, Project Mgmt. skills, and some UNIX.

SENIOR SOFTWARE ENGINEERS

PowerBuilder/JAVA/C++. Must have solid OOP, OOA/D for internet-based and distributed C/S development.

Noblestar offers an excellent compensation and benefits package. Please Fax or email resume to:

Alison Broome
Fax: 973-331-5930
or 203-406-1945. E-Mail:
abroomal@noblestar.com
EQUAL OPPORTUNITY EMPLOYER

NOBLESTAR
SYSTEMS

JOIN THE WINNERS AT FOXWOODS!

Foxwoods Casino, the East Coast's premier destination resort, is looking to add to its team of winners! Our growth has created several opportunities within our MIS Department. The MIS Department supports all Tribal and Casino entities including: Accounting, Finance, Human Resources, Gaming and Shipbuilding.

Skills:

- | | |
|--------------------------------------|--------------|
| • Unix Platform | • Ethernet |
| • NT Windows '95 | • TCP/IP |
| • RS 6000 | • Networking |
| • Internet and Intranet Technologies | |

We support and modify vendor products such as: Peoplesoft, Progress and Oracle.

Successful candidates should possess a minimum of 3 years experience and an Associate's Degree in Computer Science. Strong interpersonal and problem solving skills are essential.

Foxwoods Casino offers exceptional opportunities for growth, a competitive salary and outstanding benefit package including a 401(K) plan. For a confidential consideration, please send or fax your resume and salary requirements to:



FOXWOODS
Human Resources
P.O. Box 410
Route 2
Ledyard, CT 06339
Fax: 860-885-4159

We encourage Native Americans to apply and are an equal opportunity employer.

COMPUTERWORLD

FALL Campus Edition



Issue:
October 31, 1997

Advertising Deadline:
September 17, 1997

1-800-343-6474, x8000

OUR SCHOOL KIDS NEED YOU. WE NEED YOU TOO.



More than 13,000 schools serving 9 million students realize the benefits of our proven software products. We're Jostens Learning Corporation. No other educational software company offers the range of K-12 products and services Jostens Learning does. And no other software company offers the range of challenges to talented professionals with the skills and desire to make a difference. Our specialized needs include the following for the Eastern Region:

SR. SYSTEMS ENGINEER

Provides support in the installation, modification, troubleshooting, and diagnosis of JLC s/w. Responsibilities include working as part of a customer-oriented team to ensure good customer relations and satisfaction. AA in tech. field (BS pref'd) and 3 years' related exp. or equiv. required. CNE/ECNE and 5-8 years' technical and supervisory exp. pref'd, as well as exp. with LANs (Novell and AppleShare). Excellent analytical, interpersonal, communication, and customer service skills essential. Overnight travel required.

SYSTEMS ENGINEER

Provides h/w and s/w service including new installation, updates and troubleshooting of network operating systems. Min. 2 year technical degree, at least 2 years exp. as a Systems Engineer in a field environment, and CNE pref'd, as well as exp. with LANs (Novell and AppleShare). Excellent communication and customer service skills required. You must have a serviceable vehicle and an excellent driving record.

To learn more about our industry leading software development company, visit our Website at <http://www.jlc.com>

We offer excellent benefits, including immediate participation in 401(k) plan with guaranteed match. Please submit resume and cover letter to: **Jostens Learning Corp., Job Code: BP, 9920 Pacific Heights Blvd., San Diego, CA 92121.** INTERVIEWS WILL BE CONDUCTED LOCALLY. No Phone Calls Please. JLC is dedicated to workforce diversity and EOE.



Jostens Learning
Together, Making A Difference

YEAR 2000 PROJECT DIRECTOR

VACANCY NO.: 5004-0000-0003-145
DIVISION: Systems Development Services.
SALARY GRADE: 80T (81T effective June 1, 1997)
SALARY RANGE: Commensurate with experience
APPT TYPE: Permanent full-time
LOCATION: Wake

DESCRIPTION OF WORK:

The state is seeking an experienced project manager to lead the statewide Year 2000 compliance conversion effort. This individual will direct a team of state staff and outside contractors, and work closely with all state agencies, to assure the successful conversion of the state's computer systems to Year 2000 compliance.

The following attributes are important to this position:

- Experience in large-scale
- Successful technology projects in the project manager role with direct planning and execution responsibilities
- Understanding of the State of North Carolina's business and technical environments
- Ability to work effectively with a broad range of individuals at all levels of responsibilities and disciplines
- Ability to easily manage multiple concurrent tasks
- Ability to communicate effectively both orally and in written form
- Experience in the budgeting and fiscal management of project expenditures
- Proven ability to manage projects across organizational lines

TRAINING AND EXPERIENCE:

Graduation from a four-year college or university and five years of experience in progressively responsible systems analysis work including at least one year in a supervisory capacity; or graduation from a technical school or community college with a two-year degree in related computer technology and six years of experience in progressively responsible systems analysis work including at least one year in a supervisory capacity; or an equivalent combination of education and experience. (A degree in computer science, mathematics, or related field may be substituted for two years of the experience requirement.)

The successful candidate should have the following training and experience:

- Management prefers an advanced degree in information systems management with six years progressive experience in managing technology projects of increasing size and complexity.
- Management prefers three years experience with Year 2000 conversion programs.

To reply, submit a State application to Department of Commerce, 3512 Bush Street, Raleigh, N.C. 27609, Attention: Personnel Services. The State application may be downloaded at www.osp.state.nc.us/OSP or you may call (919) 981-5035 for assistance.

The State of North Carolina Department of Commerce is an Equal Opportunity Employer



Choose Your Own Path

Information Technology Consultants



Have the ultimate choice at KPMG, a worldwide professional services firm, providing sophisticated business solutions to our clients.

YEAR 2000 CONSULTANTS

We seek the finest professionals to join a cohesive team, mapping strategies to take our clients safely into the next century. HOW? By leveraging their investments, whether their course of action is to retire, replace or renovate their current legacy systems and, by giving in-depth, customized assessments that address more than simply expanding the two-digit field. We're giving immediate consideration to professionals who have 3+ years of experience in the following:

- Project Management of large complex system conversions and implementations.
- Significant conversion experience with languages, operating systems, databases & application re-hosting.
- Management of mainframe programming, conversion control and testing.
- Hardware/software experience with IBM mainframe/Cobol, AS/400, DEC/VMS, UNIX/C, C++.

Year 2000 Consulting opportunities exist throughout the United States. For these positions, please forward resume and salary requirements to: KPMG, Human Resources, Dept. EKM/Y2K, 345 Park Ave, NY, NY 10154.

For more information about KPMG, visit our website at www.us.kpmg.com/ssc



APPLICATIONS SPECIALISTS

Client/Server Analysis and Design: Qualified candidates should possess design skills as well as in-depth knowledge in each of the following:

- GUI development: VisualBasic or Powerbuilder
- Relational DataBase: Oracle, Sybase, SQL Server or Access
- Object Oriented Technology: Visual C++, C++ or Delphi

Document Management/ Imaging/Workflow Technologies FileNet, Wang(Eastman), ViewStar, Action Technologies

Internet Development • ActiveX, Java

Opportunities for Applications Specialist exist in New York, New Jersey and Connecticut. For these positions, please forward your resume and cover letter to: KPMG Consulting, Attn: Dept. LM, 345 Park Avenue, New York, NY 10154, Fax 212-872-7653.

At KPMG, you'll be rewarded with a highly competitive compensation and benefits package in an environment where your contributions are acknowledged and rewarded. We are an equal opportunity employer m/f/d/v. KPMG Peat Marwick LLP is the US member firm of KPMG International.

Join KPMG in this, our centennial year. Our greatest moments are yet to come.

make a dare to Difference!

WESCO Distribution, Inc., a billion dollar plus distribution company, has openings for Programmer/Analysts with one or more of the following skills:

- Relational Database (Informix preferred)
- 4GL Programming
- C, UNIX & GUI Interfaces
- Tandem Programming (SQL, COBOL)

Entry-level and advanced positions are available. The ideal candidate will possess BS degree in Computer Science or related field or have 2+ years of experience.

Our salaries are highly competitive and all employees receive a compensation benefit package that is among the finest in the industry. Interested candidates should reply with resume and salary requirements, to:

WESCO Distribution
Commerce Court
Suite 700
Four Station Square
Pittsburgh, PA 15219
ATTN: IS/LC
Fax: 412-454-2510

WESCO
the extra
effort people



An Equal Opportunity Employer

APPLICATIONS DEVELOPMENT PROFESSIONALS

GATX Logistics Inc. is an industry leader in providing integrated third party logistics solutions. We provide value added services for a wide range of warehousing, packaging, transportation and inventory management needs. Our ever growing customer base encompasses over 100 facilities throughout the U.S., Canada and Mexico.

Our infrastructure of AS/400s, RS/6000 and Intel platforms provides the opportunity for Application Developers to utilize many skills. A number of software tools including AS/400 Synon/2E, Obsidian, C/C++, and Lotus Notes are utilized to offer comprehensive logistic system solutions. The information exchange is streamlined through the use of EDI. Our continued success has created immediate career opportunities in the following areas:

- EDI • Transportation • Development Leads
- Sr. Systems Analyst (System Architect)
- Strategic Systems • Client/Server
- Peoplesoft/JDE Programmer

We offer an excellent salary and benefits package and the opportunity for growth. Please forward your resume and salary requirements to: GATX LOGISTICS, INC., Staffing, 1301 Riverplace Boulevard, Suite 1200, Jacksonville, FL 32207 or Fax: (904) 398-5647 or e-mail: sjoakman@Interramp.com (NO PHONE INQUIRIES OR RECRUITERS). Equal Opportunity Affirmative Action Employer M/F/D/V



CONSULTANTS IMMEDIATE INTERVIEWS

MAINFRAME

- DB2 or CICS
- VAX/COBOL
- Internals
- Focus
- Bus/Analysts
- DBAs
- Year 2000
- SAP
- PL1
- BAL
- Natural 2
- AS 400
- CSP
- IMS
- IDMS/ADSO
- Cobol
- Modelers
- Stratus
- CICS 6000
- Dual Asur
- Unix
- Lotus Notes
- Sybase
- PowerBuilder
- Help Desk
- C or C++
- HTML/JAVA
- Ingres
- Smalltalk
- Win NT or 95
- Visual C++
- DBAs
- Peoplesoft
- Oracle
- NT Upgrads
- TCP/IP
- Vis Basic
- HP Sys/Admin
- LAN/WAN
- FileNet
- Informix
- Testers
- Encina
- Tech Support
- Novell
- CORBA
- OOA/OOD
- Device Drivers

CLIENT SERVER

- Lotus Notes
- Sys/Admins
- PowerBuilder
- Help Desk
- C or C++
- HTML/JAVA
- Ingres
- Smalltalk
- Win NT or 95
- Visual C++
- DBAs
- Peoplesoft
- Oracle
- NT Upgrads
- TCP/IP
- Vis Basic
- HP Sys/Admin
- LAN/WAN
- FileNet
- Informix
- Testers
- Encina
- Tech Support
- Novell
- CORBA
- OOA/OOD
- Device Drivers

Rohn Rogers Consulting

Attn: Roger Sichel
1185 6th Ave., 36th Fl.
New York, NY 10036
800-421-5158 • 212-921-1319
Fax 800-770-6360
<http://www.rohn-rogers.com/rohn-rogers/>

Steve Wyne
1451 W. Cypress Creek Rd.
Ft. Lauderdale, FL 33309
954-489-2700
Fax 954-489-6474

NetGuru Systems, Inc., located in Boston, MA has the following opening for an experienced software engineer:

SOFTWARE ENGINEER

An individual with 2 years related experience is needed to analyze, design, develop, test, implement and support systems and applications using SQL and C/C++ in Windows and UNIX environments. Preparation of manuals and assisting with VoiceFax Secretary Software and Integrated Voice Response System projects whose programs include Voice Mail, Fax, Scheduler and Fax-On-Demand applications utilizing VisualVoice, Visual C++ and VisualBASIC 3.0 on Windows 3.1 and MS WindowsNT platforms will be included in your responsibilities. The utilization of Fax-On-Demand software requires the ability to interface to program document images or text. This software also interfaces with VisualVoice which in turn interfaces with Dialogic VoiceMail Card and Drivers.

Qualified candidates must have a Bachelor's degree in Electrical Engineering, Computer Science, Math or a related field. Experience in analysis, design, development, testing, and implementation and support of systems, as well as SQL and C/C++ in Windows and UNIX environments is necessary.

Salary: \$67,000, 8:00am - 5:00pm, Monday through Friday. Please send 2 copies of your resume, to: Case #70S43, P.O. Box 8968, Boston, MA 02114. EOE.

Global Resource Management

Technology Consultants

VISUAL BASIC \$85,000	IMS/DB2/COBOL \$75,000
BUSINESS ANALYST W/ FUNCTION POINT \$80,000	CNE/MCSE \$70,000
IMS/SMPE/BMC \$130,000	OBJECTSTAR \$120,000

GLOBAL RESOURCE MANAGEMENT
7785 Baymeadows Rd., Suite 108, Jacksonville, FL 32256
800-408-8005 (voice) • 888-408-8006 (fax)

Information Systems Professionals

DB2 or IMS COBOL, NATURAL, ORACLE/PRO C-to \$75,000 QUALITY ASSURANCE TESTERS OR UNIX ADMINS-to \$65,000

Positions available in NE Florida
(Bonus Contracts Available)

Fax Resumes to:

World Software Solutions, Inc.

(904) 272-1011 or 1-888-880-WSSI (9774)

Senior Field Engineer (Ft. Lauderdale, FL): Consult, set-up, troubleshoot technical eng. operations, includ. telecine color correction & editing systems at various video processing labs in region. Develop techniques for improvement of operational quality & design efficiency for telecine systems, relevant to SMPTE & NTSC standards. Resolve complex problems involving interaction of multiple system components. Train & provide customer/technical support for operations staff in use of highly technical equipment. Frequent travel nationally & internally (about 50% of time) to be pd. by employer. Req. 4 yrs. exp. in job or 4 yrs. exp. as telecine systems engineer. Sal. \$68,000/yr. 40 hrs/wk. Submit res/ltr in dupl. to FDLES Bureau of Operations, 1320 Executive Center Dr., Ste. 110, Tallahassee, FL 32399-0667. Re. J.O. #FL-1662095.

Sr Sftwr Eng'rs: Dev'p, design & test client/server (C/S) system apn'n w/ PowerBuilder 4/5 (PB), Sybase on UNIX using OOP Methodology; Provide clients w/pb traing, monitor'g & co-develop't; Supervise GUI design/testing undr C/S archit'ure w/ Stored Procedure for database mgmt; work alone at client site/lead a team to design database model, optimize database mgmt & train users. 40h/w, 8-5, \$55k/yr, MS in Comp Sci/Engg, 1.5 yr as Sftwr Eng'r. Resume to FDLES 1320 Exec. Ctr. Dr. #110, Tallahassee, FL 32399. job # 1623664.

SYSTEMS ANALYST. Analyzes user requirements, procedures, and problems to automate processing or to improve existing computer systems. Bachelor of Science degree in computer science, engineering, or math-related, and 2 yrs. exp. req'd. Must be able to travel. Two (2) yrs. exp. on case tools (synon2E), Oracle RDBMS, 3 GLs (RPG1400, CL400, DB2/400, C, C++, COBOL), EDI (Premises). \$41,000/yr. Interested applicants apply by resume to Georgia Department of Labor, Job Order # GA 6114223, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909, or the nearest Department of Labor Field Service Office.

SDS

An Information Technology Firm

Permanent and contract positions are currently available throughout the Southeast. Any and all skills are of interest to us:

• CLIENT SERVER • MAINFRAME • MIDRANGE

Excellent compensation and benefits, training, relocation assistance, and 401-K. Call or write today: Software Data Services, Inc., 4600 Park Road, Suite 109, Charlotte, NC 28209.

PHONE: (800) 521-8077 or (704) 521-8077

FAX: (704) 521-8078

WWW.SDSINCORPORATED.COM

Programmer/Analyst, Louisville, KY. Dvlp ORACLE/SQL*SERVER Warehousing & Network Administration Systm. Utilize Lan Mgr & Ethernet protocols to analyze & implmnt n/working reqmt for 20 node n/work. Dvlp n/work using C, OS/2, OS/2 Presentation Mgr to facilitate Terminal-RS/6000 connectivity. Utilize ODBC, C to define user & appli security for Data & File Administration applic. Dvlp C/ORACLE subroutines. Req BS-Engg or Comp Sci & 1yr. Prgrm Analyst or s/ware consultant exp. Education or exp to incl Comp Prgrmg, Comp Networks, OS, Database Mgmt Systms, Data Structures. Exp to incl 1 yr of systm & prgrmg exp w/following applic or tech: Dsgn, prgrmg & implmntr of PC or Client Server based N/wk applic using Lan or TCP/IP protocols; C, C++, or FORTRAN based applic; proficiency w/comp h/dware, n/working equip & s/ware. \$38,600/yr. Resume to: Jane Hosley, JO No. JO# KY0368067, Dept for Employment Services, 275 E. Main St 2W, Frankfort, KY 40621.

Data Base Design Analyst: Design logical/physical data bases, coordinate data base dev applying knowledge of data base design standards/mgmt systems. Det if project req creating new programs/modifying existing programs, create req programs. Review procedures in data base mgmt system manuals, making changes to data base. Dev data model using comp software. Create description to explain how programs should access data. Write physical data base description to protect company data resources against unauthorized access. Hardware: UNIX Server. Operating Systems: UNIX System V Release 4, HPUX, SCO. Languages: C & SQL. Software: Oracle 7.2, SQL Forms (3.0 & 4.5), SQL Menu 5.0 & PRO*C. Req: Bachelor's in Computer Engineering + 2 yrs exp. \$50,000/yr. Job is in Miami, FL, 40 hrs, 8:30-5:30. Submit resume to: FDLES Bureau of Operations, 1320 Executive Center Dr., Suite 110, Tallahassee, FL 32399-0667. Re: Job Order # - FL 1618761.

SOFTWARE ENGINEER: Experience in Systems Analysis and Design; Demonstrated ability to work with Sybase under SUN OS and HP UX; Proven ability in leading the team and in project management from system study to implementation of the system; Experience as both development & Production DBA in Sybase. The job duties are: Analysis of current procedures and problems to refine and convert the data to programmable form; determine output requirements; study existing system to evaluate effectiveness; upgrade systems presently in use; develop, test and implement new software; observe functioning of newly implemented systems on programs for trouble areas; correct system/programs as necessary. Requires Bachelors in Science or Computer science with three years experience in software development. 40 hours per week at \$70,000/- per year. Please send resume to Case # 70322, PO Box # 8968, Boston, MA 02114.

Computer Systems Engineer - Japanese. Resrch/dsgn/dvlp s/ware systms, networks, printing solutions & products for Mac/x86/Unix h/ware platforms in Japanese for medical/industrial/military/communication/aerospace/scientific applics, applying principles of comp sci/engg/mathematical analysis; evaluate h/ware & s/ware interface & oper'l/performance reqmts of overall systm; analyze/plan data processing reqmts/layout/installation/time/cost; train users; utilize fluent oral/written Japanese; & write code in Pascal, FORTRAN & C++. Reqs BS in elec engg, sysms engg or closely related field. 40hr/wk, M-F, 9a-5p. \$35K/yr. Resume to: FDLES Bureau of Operations, 1320 Executive Center Dr, Ste 110, Tallahassee, FL 32399-0667. Re: JO# FL-1618653.

PROGRAMMER ANALYST. Plans, develops, tests and documents computer programs, applying knowledge of programming techniques and computer systems. Bachelor of Science in computer science, engineering, or math-related, and 1 and 1/2 yrs. exp. req'd. Must be able to travel. 1 and 1/2 yrs. exp. IBM 3090, OS, MVS, REXX, DB-2, JCL, CICS, VSAM. \$41,000/yr. Interested applicants apply by resume to Georgia Department of Labor, Job Order #GA 6114217, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909, or the nearest Department of Labor Field Service Office.

COMPUTERWORLD FALL Campus Edition

Issue:

October 31, 1997

Advertising Deadline:

September 17, 1997

1-800-343-6474, x8000

Reserve your place

New England CORPORATE TECHNICAL RECRUITING CONFERENCE

COMPUTERWORLD

November 17, 1997

Boston Marriott Burlington Burlington, MA

For information:
1-800-488-9204

Telecommunications Professionals

One Thousand Islands

and a million reasons
to move up to Frontier.



This is your opportunity to move up to Frontier... the pacesetter who is revolutionizing Telecommunications. As a leader in one of the fastest growing markets in the world, we are leveraging our strengths in long distance, leading edge wireless communications, sophisticated telephone operations and integrated telecommunications business systems such as teleconferencing, and paging. By partnering with Quest Technology, we're building a fiber optic network that will span coast-to-coast. Those are just a few of the reasons you should consider moving here.

Located on one of the Great Lakes, Ontario, Rochester is a very livable city with museums, affordable housing and respected institutions of higher learning.

Internet Manager**Intranet Project Manager****Internet Technicians/ Developers****Software Engineers - C++****AS400 Programmers**

Many of these positions are also available at other locations throughout the country.

We also offer a competitive compensation package and relocation assistance. Please forward your resume to: Corporate Staffing-L.P., Frontier Corporation, 180 South Clinton Avenue, Rochester, NY 14646. Fax: 716-232-1045. E-Mail: ponticel@frontier.net Search: www.frontiercorp.com We value diversity in the workplace. EOE.

frontier

COBOL PROGRAMMER

COBOL PROGRAMMER POSITION available for systems professional with 5-7 years COBOL programming experience. Position will support Republic Business Credit Corporation, subsidiary company of Republic National Bank of New York. Qualified candidate must have experience with Software AG Database system ADABAS and ADASQL. Experience with CICS COBOL command level a must, and knowledge of IBM-MVS Operating System a plus.

For immediate consideration, please fax resume with salary requirement to: Nancy Pedisich, Republic National Bank, (212) 525-7575

Republic National Bank
Republic National Bank of New York

Software Computer Consultant: Research, design, develop computer software systems in conjunction w/hardware product dev using knowledge of computer science inc. Databases: Oracle 6.0/7.0; Resource Managers: SQL*FORMS 3.0, SQL REPORTWRITER* 1.1; Hardware: UNIX. Analyze software req to determine feasibility of design within time/cost parameters. Dev/direct software system testing procedures, programming & documentation. Req: Master's in Computer Science + 1 yrs exp., Job is in Pompano Beach, FL. \$48,500/yr, 40 hrs, 8:30-5:30. Submit resume to: FDLES Bureau of Operations, 1320 Executive Center Dr., Suite 110, Tallahassee, FL 32399-0667. Re: Job Order # - FL 1618714.

INFORMATION TECHNOLOGY PROFESSIONALS

Declare Your Independence

CHALLENGE. DRIVE. AMBITION. They work together to give you the lifestyle you want. But one component is missing - a great career that is as enjoyable as your leisure time. Find that missing piece as a member of Liberty Mutual's I/S team.

Liberty I/S has begun a major expansion of its software development centers and we have opportunities available at all levels for our strategic development

initiatives. Choose from our corporate data center in the beautiful seacoast town of Portsmouth or our Massachusetts development center conveniently located just off Rt 128/Rt 1 in the Beverly/Danvers area. You'll work in an OO Client/Server environment including Win95, NT, C/C++, VB, Sybase, DB2, RS6000-AIX and MVS/ESA. We are committed to employee development and keeping pace with the latest in

cutting-edge technologies for the development of the best business solutions for our customers and our company.

We offer you a remarkable opportunity, backed by the strength and stability of Liberty Mutual, a company with over \$37 billion in consolidated assets. It's an opportunity that can provide you with the challenges, growth, experience, and lifestyle you are seeking.

DATA ANALYSTS/ARCHITECTS
SOFTWARE QA/TEST ANALYSTS
SOFTWARE USABILITY PROFESSIONALS

STRATEGIC ARCHITECTS
TECHNICAL/FUNCTIONAL CONSULTANTS
PROJECT MANAGERS/PROJECT LEADERS

BUSINESS ANALYSTS
OO CLIENT/SERVER DEVELOPERS
TECHNICAL & PROGRAMMER ANALYSTS

If you're ready to accept the challenge of one of the positions listed, please forward your resume to: Bill Hickmott, Liberty Mutual Information Systems, 225 Birthwick Avenue, Portsmouth, NH 03801. Fax: (603) 431-0709; email: Jobs@Lmig.com

Liberty Mutual Group is an equal opportunity employer committed to workforce diversity.

LIBERTY MUTUAL
The freedom of Liberty

Look us up on our web site at: www.libertymutual.com

APPLICATION ENGINEER to develop HMS (Homeomorphic Metric Space) mapping techniques for high speed computing and database searching in network; develop data encoding/decoding and image compression/decompression codes for database space saving; analyze, code and debug in C++ and Fortran in Windows NT environment. Require: M.S. in Electrical Engineering. Must demonstrate ability in image compression/decompression and HMS mapping upon interview. Salary: \$47,000 per year, 9am to 6 pm, M-F. Mail resume in duplicate to: Georgia Department of Labor, Job Order # GA 6114232, 2636-14 M.L. King Jr. Drive, Atlanta, GA 30311-1605 or the nearest Department of Labor Field Service Office.

System Analyst: Develop applications in LOTUS NOTES, LOTUS FORMS, NOTES REPORTER, LOTUS APPROACH 3.0 & NOTES VIP; utilize front end development tools such as VISUAL BASIC & POWER BUILDER; responsible for setting up Notes network on Windows, UNIX & NT servers, & setting up ACL's for Databases & Servers; support & maintain Notes users & Servers (Editing & Changing Server related documents, etc.). Req: MS in computer science; must be certified Lotus Note Consultant, 40hr/wk, 8-5pm, \$60,000/yr. Apply in person or send resumes to Georgia Dept of Labor, Job Order # GA6110035, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Dept of Labor Field Service Office. Must have proof of legal authority to work in the U.S. Employer paid ad.

U.S. HOUSE OF REPRESENTATIVES HOUSE INFORMATION RESOURCES

ASSOCIATE ADMINISTRATOR

Job Summary: This executive level position is responsible for directing, managing, and leading House Information Resources (HIR) in the development and operation of the House's information and communications systems; formulating management and technical plans to ensure that the House's information requirements are met; preparing and managing HIR's budget; and supervising the day-to-day operations of the Office of HIR. **Requirements:** Master's degree or equivalent senior level work experience. Extensive experience in managing a multi-level technical support organization. Experience with change management and proven success in changing the culture of a technical organization. Full knowledge of computer operations activities. Demonstrated competence in a wide range of technical and administrative areas, to include the preparation of departmental budgets and major hardware and resources procurements. Ability to provide technical leadership in the various system generation activities. Ability to communicate, both orally and in writing, with elected officials and senior staff thereof, information systems professionals, and non-technical users. Knowledge of the legislative process and environment preferred.

DIRECTOR, SYSTEMS INTEGRATION

Job Summary: This senior level position is responsible for directing and managing the Systems Integration Group in the design and integration of new, cost effective services. Responsibilities include planning the development of new information systems, designing and implementing applications, and ensuring that products and services are thoroughly reviewed and assessed to effectively meet the information needs of the House.

DIRECTOR, CLIENT SERVICES

Job Summary: This senior level managerial position is responsible for directing and managing the Client Services Group in providing information technology and communication support to Member's Washington and district offices, Committees, and House support offices. Incumbent ensures that House offices receive the best available and most cost effective office automation, telephone systems, information access, user training, video conferencing, and related services. **Requirements for the Director, Systems Integration and the Director, Client Services:** Ability to perform duties stated in job summary. Extensive work experience in a combination of technical/managerial disciplines. Demonstrated understanding of the opportunities to enhance organizational effectiveness through information services. Extensive experience in project management and serving as a technical leader on information technology projects, and assisting and leading other personnel. Ability to communicate effectively, both orally and in writing, with information systems professional and non-technical users. Bachelor of Science degree in Computer Science/Management Information Systems or equivalent experience.

Background and criminal history records check required. All applicants will be considered without regard to race, color, national origin, religion, sex (including marital or parental status), disability, or age. Employment with the House is at-will. These positions are exempt under the FLSA.

Mail resume and salary requirements to: Office of Human Resources, Attention: CAO-KEF, Room 263, Cannon House Office Building, Washington, DC 20515-0610.



SAP PROFESSIONALS

Fast-growing national and international consultancy with a reputation for first-class consultants offers
**WORLD-WIDE CAREER OPPORTUNITIES FOR
TOP QUALITY PROFESSIONALS**

CURRENTLY STAFFING PROJECTS IN:

US, Canada, South America, Pacific Rim and Europe:
especially in these skills and industries: FI/CO, Basis, ABAP/4, PM, MM, WM, PP, SD, EDI, Supply Chain/Manufacturing, Utilities and Retail Experience in an SAP Environment.

LI/NYC: Sales and Technical Recruiting

Competitive compensation with performance incentives for strong professionals with deep experience; comprehensive benefits package

- ▲ EXPERIENCED PROJECT MANAGERS \$ 180K +
- ▲ TEAM LEADERS \$ 150K +
- ▲ CONSULTANTS \$ 100K +

Send Resumes to the Attention of Resource Manager.

spearhead™

SPEARHEAD SYSTEM CONSULTANTS (US) Ltd.

99 Seaview Blvd., Suite 340, Port Washington, NY 11050 • voice 516-625-9000, fax 516-625-9687
55 Broad St., Suite 13F, New York, NY 10004 • 212-968-1346, 212-968-1348, fax 212-968-1352
e-mail david.epperly@spearhead.com • www.spearhead.com
1.888.spearhead
SAP™ National Implementation Partner

Let
COMPUTERWORLD
help with your
I.T. salaries.

The industry's most authoritative resource for setting I.T. salaries is now available on disk. Computerworld's 10th annual Salary Survey on disk reveals the salaries of 27 I.T. positions, by 21 industries and 9 regional breakouts.

Also included is Computerworld's Skill Survey

- Learn the premiums I.T. managers are paying for specific I.T. skills.
- How are full-time and contract workers being paid for the same skill?
- Which skills are in the highest demand?
- Over 80 skills are listed including languages, development tools, client/server applications, system software, groupware, networking and more. Each broken out by 20 industries and 9 geographic regions.

Division Director

Los Alamos National Laboratory has a long history of leading the High Performance Computing community in support of its primary responsibility for simulating the most complex physics problems. The Computing, Information, and Communications Division, which is responsible for providing supercomputers to support this activity of maintaining and enhancing this problem solving environment and infrastructure and for information services at the Laboratory, is seeking a new Division Director. This senior-level manager will be required to provide the leadership necessary to take the Laboratory into the next century and will have the authority and autonomy to accomplish this. To find out more about this position along with qualifications and requirements, please visit our Website: www.lanl.gov Job # 972553-CIC97101

If you meet these qualifications, please e-mail your resume and publication list to: jobs@lanl.gov; fax (505) 665-1079; or mail to Human Resources Division, Los Alamos National Laboratory, Job #972552-CIC97101, MS-P286, Los Alamos, NM 87545. Note appropriate job# must be inserted. Explore our web page to learn more about Los Alamos National Laboratory: <http://www.lanl.gov>. EOE.

Making History

Applications Programmer - Convert data from specs & create, modify SAP module progs; describe input, output, enter & correct code; write s/ware documentation; use: SAP R/3, ABAP/4, HP-UX Server. Bachs/Comp Sci or Engg or Math. 18mos/exp. in job offered or 18mos as Systs Engr or S/ware Engr or Prog or Prog/Anal or any comb. thereof. Exp. must incl. 6mos using SAP R/3, ABAP/4 & HP-UX Server. 40hrs/wk; (9-6) \$88,000/yr. Over 50% of time in Greensboro, NC vicinity; bal. elsewhere. Apply to the nearest Job Service office or submit a resume to: Job Service, 2005B S. Elm-Eugene St., Greensboro, NC 27406. All resumes must incl. applicant's Social Security #, & Job Order #NC4065255 & DOT code 030.162-010.

PROGRAMMER ANALYSTS Multiple positions for Programmers with 2-3 yrs. experience: CICS, COBOL II-JCL-DB2-MVS 40 hr/wk, \$55k-\$80k/yr. Requires Bachelor degree: Computer Science, Electronics, any Engineering degree or Math. Employer is a consulting company, relocation to client sites is required. Send copy of ad and resume to: 4C SOLUTIONS, INC., Attn: Charlie Tarpley, 1201 7th St., East Moline, IL 61244, Ref:JO# 201-5

COMPUTERWORLD FALL Campus Edition

Issue:
October 31, 1997

Advertising Deadline:
September 17, 1997

1-800-343-6474, x8000



price: **\$349**
to order, call 1-800-500-7460



<http://careers.computerworld.com>

CONTRACTORS

JOBS on the INTERNET: www.winterwyman.com

INFORMATION SYSTEMS

- Oracle Developers & DBA's
- Messaging: cc:Mail, MS Exchange, MS Mail
- SAS: (UNIX/PC/VMS)
- Visual Basic, SQL Server, Access
- Delphi, C++, OO
- SMS/SQL Implementation
- HTML/JAVA Web Developers
- NT & Novell Administrators
- Desktop Support
- UI Developers (C++, DD, OLE)
- Mainframe (Cobol, CICS, DB2, JCL)
- Lotus Notes Administrators & Developers



SOFTWARE ENGINEERING

- C++, UNIX
- C/C++, pSOS, Telecommunications Industry Exp.
- C, Shell Scripts, UNIX, WAX Experience
- VC++, MFC, DLE, NT, SQL Server
- Windows NT Device Drivers
- IP Protocol Dev., TCP/IP, RIP, PIM, DVMRP
- C, TCP/IP, UNIX
- Internationalization, Doublebyte Developers
- European & Asian Translators
- QA: Win95, NT Automated
- QA: Windows, MAC, Web Experience
- QA: UNIX, C, SQA Robot

Winter Wyman Contract Services

BOSTON AND NATIONAL CONTRACTS:

Contact: Donna Byrne 617-890-7007
Outside MA: 800-890-7002 Fax: 617-890-4433
400-1 Totten Pond Road, Dept. CW, Waltham, MA 02154-2000
Email: contract@winterwyman-contract.com

ATLANTA:

Contact: March Mansell
770-933-1525 Fax: 770-933-1526
1100 Circle 75 Pkwy, Ste. 800 Dept. CW, Atlanta, GA 30339
Email: atlanta@winterwyman.com

PeopleSoft

We are seeking Professionals to join our PeopleSoft Consulting Practice—
all modules. Contract & permanent positions available nationwide.



Attn: Craig Stevens
Tel. 1.800.676.7374 ext. 227
FAX +1630.717.0909
cstevens@trans-tech.com
www.trans-tech.com

Integrated Systems Professionals

A Fast-Growing National Consultancy Offers Exciting Opportunities For Top Quality Professionals.

Project Managers Team Leaders/Consultants

- Long-Term Career Opportunities
- Short-Term And Long-Term Contract Opportunities

Experience in all SAP R/3 Modules Basis and ABAP
Oracle • PeopleSoft • Baan

Performance-Based Compensation provides exciting opportunities for experienced professionals. (To \$250K OR \$150 per hour for experienced SAP experts)

Please fax resumes to 516-625-0740 or visit us at <http://www.ipr.com>

IPR INC.

*What do you
do when
you feel
that
no one is
listening?*



*Change
your
audience.
TEACH.*

Teach Full or Part Time Variety of Computer Courses

Does the following scenario sound familiar? There is a procedure in your company that needs improvement. You come up with a solution that would have the bean counters hailing you as a hero. You develop your solution, present it, and it's promptly...nixed. Or worse yet, ignored.

There are many people out there who are eager to listen to you. People who are anxious to learn from a skilled professional who's "been there". They are the students of DeVry. And they are waiting for someone like you to teach them.

The DeVry Institutes of Technology are well-known for giving students an excellent "hands-on" education. Upon completion of their degrees, they're ready to hit the ground running. That's why so many Fortune 500 companies seek out our graduates year after year.

We are seeking IT professionals to teach a variety of computer courses full- or part-time at our Institutes of Technology across the country. Ideal candidates will have an advanced degree with at least 3 years' experience, and good presentation and communication skills.

Take your career into a new realm, or simply augment what you're now doing by heading a classroom. Contact us to learn about positions available. Please indicate the location in which you are interested, and send your resume to Nick Koclanis, Human Resources, DeVry Inc., One Tower Lane, Ste. 1000, Oakbrook Terrace, IL 60181. Fax: 630/990-1890. EOE m/f. Visit us at www.devry.com

DeVRY

Accredited by the Commission of Institutions of Higher Education of the North Central Association of Colleges and Schools

Atlanta • Chicago • Columbus, OH • Dallas • Kansas City • Long Beach, CA
Pomona, CA • Phoenix • North Brunswick, NJ • Calgary, CAN • North York, CAN

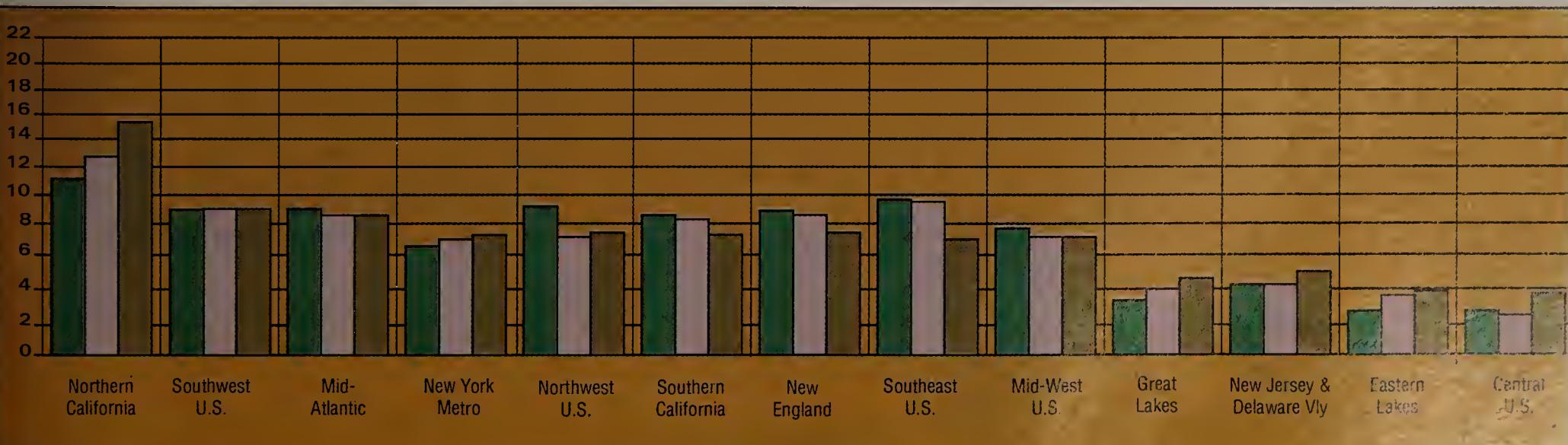
CorpTech Career Index: Information Technology

Percent change in number of employees by region

March

April

May



California and Colorado Jobs!!!

CPS has many exciting long term contract opportunities in Southern California and in Colorado for experienced Programmers and Analysts. Both Contract and Lease to Hire positions are available. If you are experienced with:

- C++/UNIX/Sybase and/or Oracle
- Cobol/MVS (DB2 CICS IMS major Pluses)
- RPG400/AS400
- Client Server
- DBS (SDT/PDL)

We have jobs for you. Available assignments include both development and Year 2000 projects.



CPS serves an elite group of customers that look to us to provide them with the best Information Systems Professionals available. Call us and see if you meet the test of excellence.

Commercial Programming Systems, Inc. 3250 Wilshire Blvd. Suite 1212 Los Angeles, CA 90010 Ph: 1-888-CPS-4JOB Fax: 213-389-2603 email: phil@cpsinc.com http://www.cpsinc.com.

Professionalism, Integrity, Opportunity



Are you missing these qualities in your career?

The Consulting Alliance provides distinguished consulting and training services to SAP clients worldwide and creates an atmosphere of partnership with its consultants. We are encouraging flexible,

Experienced Organizational & Technical Consultants

with 2 or more years of SAP experience and an associated degree to contact us at the following numbers.

By Fax: 605-339-2947, Phone: 605-339-3074

or by e-mail: laurie@orpartner.com. A competitive salary and benefits package as well as a positive challenge await you.

Check our homepage www.tcall.com

Principal Software Engineer responsible for project leadership of a software framework providing integration for network management applications. Project responsibilities include determining requirements, producing design specifications, project scheduling, software development and testing. Responsibilities also include project management role of local software development team, project coordination with remote development teams and 10% travel within the Northeast US. Requirements are a BCS or BEE or equiv. education & exp. (w/3 yrs. of related exp. substituting for each missing academic yr.) with 3 yrs. of exp. in job offered or 3 yrs. of exp. in software networking development including 1 yr. exp. in C++, MFC, object oriented design, MS Windows 95/NT, networking skills to include TCP/IP, SNMP, Netware and MS LAN Manager, designing and developing relational database applications using MS Access and ODBC. 10% travel within Northeast U.S. 40 hr. work week: 8:15 am to 5:00 pm M-F. Salary \$83,012.80 per yr. Send 2 copies of your resume to Case #70561, P.O. Box 8968, Boston, MA 02114 EOE Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

Programmer/Analyst. Plan, develop, test and document computer programs using PROGRESS 4GL RDBMS; analyze, review and write test code for relational database management; modify programs to increase operating efficiency; use SQL to generate flowcharts and diagrams; Integrate computer systems to facilitate communication with clients; utilize Visual Basic in Windows environment to develop a management system for client use in administering co-op advertising program; integrate PROGRESS database with Excel and Word programs through DDE Interface; develop Web (HTML) screens using PROGRESS database data; make presentations to clients; back-up network administration. BS in computer science; 1 yr. experience including PCs in UNIX, Windows (incl. API routines), DOS environment; PROGRESS 4GL, Visual Basic; PROGRESS, MS Access databases; Excel, Lotus; TCP/IP; knowledge of general accounting procedures; good oral and written presentation skills. 40 hrs./\$654.99/wk. Must have proof of legal authority to work in the United States. Send your resume to the Iowa Workforce Center, 800 Seventh St., Cedar Rapids, Iowa 52406. Please refer to Job Order IA1100628. Employer paid advertisement.



November 17, 1997
Boston Marriott
Burlington

Reserve
your
place

1-800-488-9204

<http://careers.computerworld.com>



Find
training
now.

Imagine the time saved if you could search one solid database of I.T. Now you can by simply accessing Release 1 of CareerAgent: careeragent.computerworld.com

While you're there, check out the preview of upcoming CareerAgent releases. They'll allow I.T. professionals, individually or through corporate subscriptions, to assess learning styles, establish career goals, calculate individual, group and department skill gaps with an intelligent decision support system, and focus a training search based on priority.

The point? Every individual on your team has an idea of their career plan, and knitting these plans together can benefit corporate goals. Think about your current team today. Do individual career plans in your organization seamlessly benefit from available projects? Training resources? Corporate goals? Is this information connected to cost-effectively reskill and retain staff? It's all possible with CareerAgent, where management and staff can collaborate to continuously develop a career "itinerary" for each individual. On the Internet or your intranet. Your choice.

For details, see careeragent.computerworld.com or call 1-800-343-6474, x6000 today. And make every career on your team what it should be: a well-planned journey of enrichment.



New From:
COMPUTERWORLD

CareerAgent is a trademark of COMPUTERWORLD and International Data Group

Marketplace

NEW & NOTABLE

For information on advertising,
call 203-857-5100

Veteran Coral Gables Art Director Takes Designs Online.



Can't write a lick of code
but am experienced
art director/designer

Professional design for your app or site:
www.kreative.com/visuals

admit they didn't know a lick about the visual arts, and swung countless assignments developing marketing brochures, publica-

tions and law firm images. Lawyers weren't the only ones who gladly stepped aside and let Steve work his magic. Universities, foundations, hospitals and temporary help firms all found a need for his conceptual and artistic talents. Now, Steve is working for developers to help them dress up their apps and sites for Internet and Intranet use. Steve is the first to admit he has no intention of being all things to all people. Here's what Steve isn't:

"I can't write a lick of code," he says. "And frankly, I don't want to."

Here's what Steve does best: "I am a good designer," he says. "I understand how screens are put together and I appreciate what makes a design look good." Recently, Steve completed assignments for a health care company that needed its records access system spruced up. Another company summoned him to deck out its administrative Intranet system in various shapes and colors. Both clients found Steve to be fast, efficient and an easy-going work partner. "What suits me best is a combination of consulting and hands-on design," he said. "I

might sketch out a few ideas on a napkin or a scrap of paper." Then it's back to the office to work out the problem, and communicate via fax or email. But please, no long-term on-site assignments. "I've got a very nice wife and three terrific kids, and I'd prefer an evening with them rather than sitting in a hotel room."

For a look at Steve's work, check the samples at www.kreative.com/visuals. And don't worry about his sleeping dog, Pep, on your way in. He's a peaceful fellow who doesn't bite.

www.suppliesonline.com

Computer and Printer Supplies from the Internet to Your Door

SuppliesOnline is an exciting new concept for purchasing office automation supplies instantly and conveniently over the Internet. Not only does SuppliesOnline offer ordering convenience, they provide free next day delivery and customer service that is second to none. SuppliesOnline can sell for less, and they do!

No longer do consumers have to "run down to the office supply store." Online shoppers can browse through SuppliesOnline's Virtual Warehouse, filled with over 10,000 products valued at more than \$100 million, in a matter of minutes. End users may research and purchase directly from their computer 24 hours a day, 7 days a week. "The thought of being able to find the items you want, place the order (by 4:00 p.m. CST) and have it drop-shipped directly to your door, freight free, the next business day is incredible," says Tim Weis, president of SuppliesOnline.

When you place secured order with SuppliesOnline, it is automatically verified and authorized. It is then processed by an "off-line" accounting server and the orders are sent electronically to supply vendors. The order is then drop-shipped directly to the customers door. There is no other more efficient form of distribution. Just as the Internet has evolved, so will the way consumers buy their computer supplies. Contact Alan D. Fletcher toll free: 888-484-1188, fax: 972-484-6138 e-mail: info@suppliesonline.com, www.suppliesonline.com



TECHNO

Alaska

TITANIC

Ford Explorer

\$25,000 CASH

Home Electronics

WIN EVERY WEEK!

Computerworld Marketplace TechnoToys Sweepstakes

June 23 TechnoToy:



UMAX Astra 600S Scanner

Add sizzle to your documents or just have fun with this 30-bit color scanner for PCs and compatibles.

Win one of 2 being given away!



By entering into the weekly TechnoToys giveaway, your name will automatically be entered into the year-end Super Prize Sweepstakes where you could win as much as \$25,000 IN CASH!

Fax this completed form, or all of the following information to: (800) 898-2299.

Yes, I want to enter to win a UMAX Astra 600S Scanner. Please also enter me in the end-of-year 1997 Super Prize Sweepstakes Drawing.

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

Fax: _____

email: _____

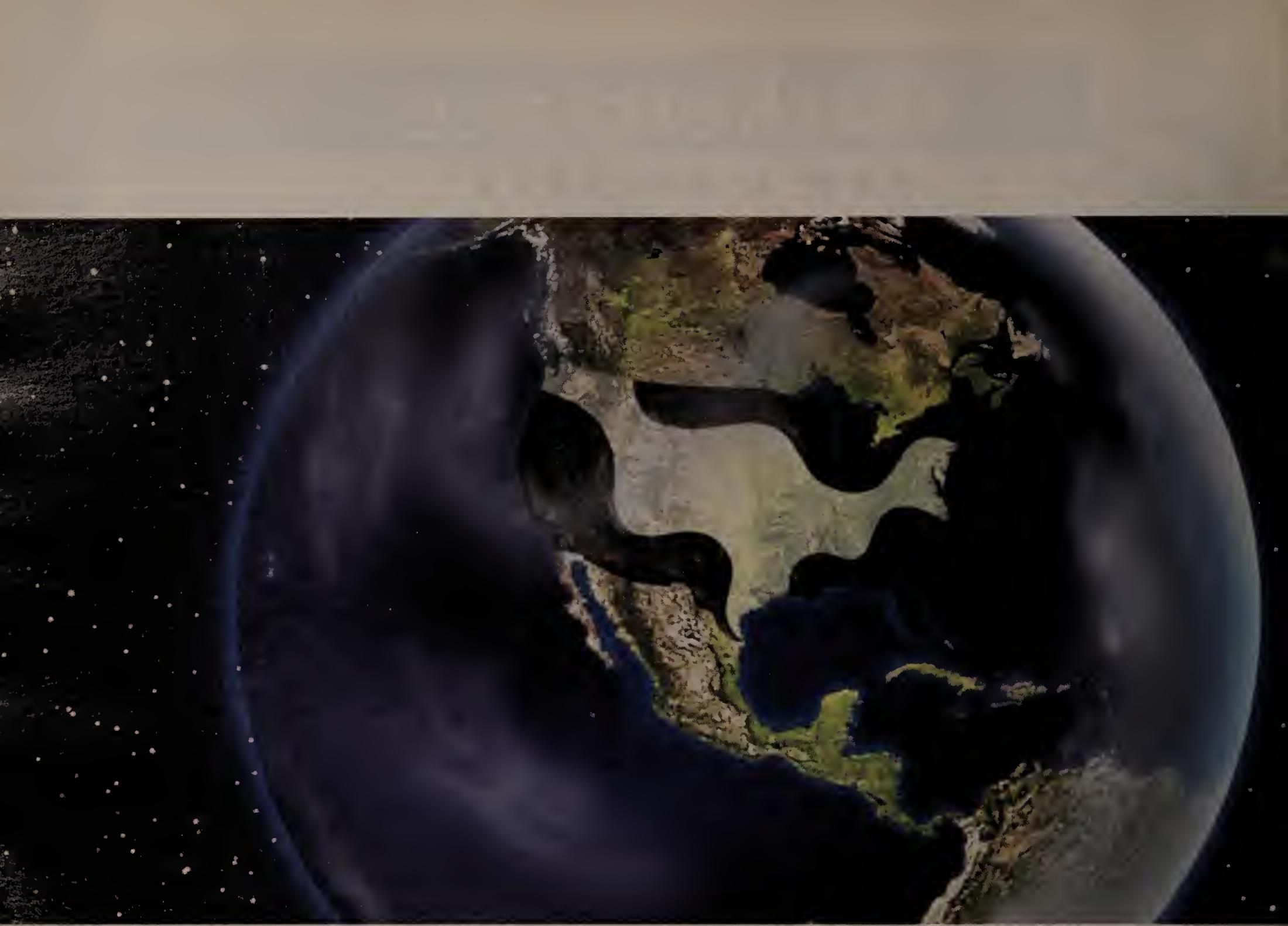
Are you currently a Computerworld subscriber?

yes _____ no _____

Issue Date: 6/23/97

No purchase necessary. All entries must be received no later than 11:59 am (EST) Mon., June 30, 1997. Winner will be determined in a random drawing on or about 5:00 pm (EST) Mon., June 30. See official rules within the Marketplace section.

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

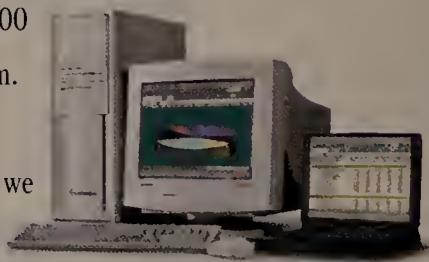


Corporate America

Corporate America has a new look these days thanks to a *Fortune* 500 PC manufacturer from South Dakota. From a two-person start-up operation in 1985 to a \$5 billion global company in 1996, Gateway 2000 has taken the PC industry *and* corporate America by storm.

In fact, Gateway has done business with 8 out of 10 *Fortune* 1000 companies in the last three years. How did we do it? By delivering Value of Ownership: the winning combination of high benefits and low cost for the life cycle of your computer. Gateway delivers it all in high-quality PCs custom built for your business that go to work for you right out of the box.

Want to know more about this cow-spotted business phenomenon?
Call Gateway 2000 today, because we mean business.



8 8 8 - 8 8 8 - 0 3 8 2

[W W W . g a t e w a y . c o m](http://WWW.gateway.com)

© 1997 Gateway 2000, Inc. GATEWAY 2000, black-and-white spot design, "G" logo, and "You've got a friend in the business" slogan are registered trademarks of Gateway 2000, Inc.

Marketplace

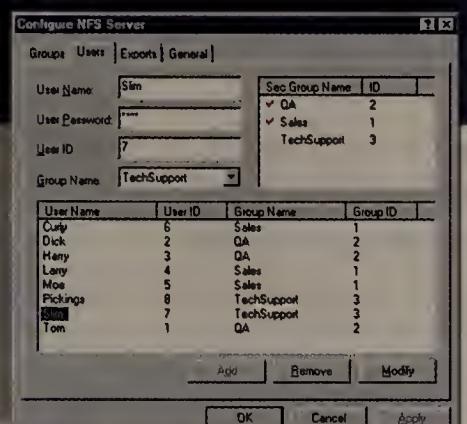
Distinct IntraNet Servers™

The Easiest Way to Manage Users and Network Resources



Highlights:

- Includes all major TCP/IP based file and printer servers in a single package: NFS Server, FTP Server, LPD, TFTP and BOOTP.
- Integrates seamlessly into Windows 95 and Windows NT
- Password protected login for all servers
- Also available for Windows 3.1.



Free Evaluation Copy Available at...



distinct
The world leader in Internet development tools

► <http://www.distinct.com>
sales@distinct.com
 Phone: 1-408-366-8933
 Fax: 1-408-366-0153

Distinct is a registered trademark and Distinct IntraNet Servers is trademark of the Distinct Corporation. Copyright 1997 Distinct Corporation, 12900 Saratoga Avenue, Saratoga, CA 95070. All rights reserved. Specifications and terms are subject to change without notice.

Looking For The BEST Company To Give You The BEST Value In IBM Computer Hardware?

We're IBM Experts:

- RS/6000
- ES/9000
- AS/400
- Series/1
- PCs
- Networks & Integration

Sales & Rentals

- ✓ Processors
- ✓ Peripherals
- ✓ Upgrades
- ✓ New
- ✓ Reconditioned With warranty



<http://www.dempseybus.com>
 e-mail: dempseybus@dempseybus.com



Dempsey
BUSINESS SYSTEMS

2136 Michelson Drive • Irvine, CA 92612-1304
 Phone: (714) 475-2900 Fax: (714) 475-2929

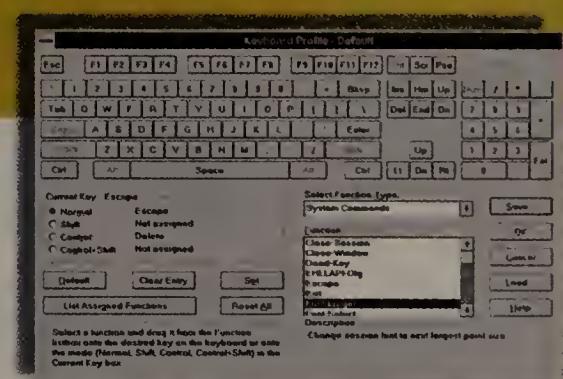
Buy • Sell • Rent (800) 888-2000

- Product Specialists
- Pretested equipment
- Flexible financing
- Configuration planning
- Offices nationwide
- Technical support
- Overnight shipping



Distinct IntelliTerm™

Integrated Terminal Emulator for DEC and IBM® Systems



Highlights:

- TN3270 Emulation—Models 2, 3, 4 and 5 (for IBM Mainframes)
- 3179G Vector Graphics & 3279S3G
- TN5250 (24x80, 27x132) (for AS/400)
- VT52, VT100, VT220, VT320 & VT420 emulation (for DEC and UNIX Systems)
- Customizable keyboard layouts, poppads and session profiles
- VBA™ Advanced Scripting Language
- DDE, HLLAPI, EHLLAPI, WinHLLAPI and Visual Basic™
- Available for Windows 3.11, Windows 95 and Windows NT

Free Evaluation Copy Available at...



distinct
The world leader in Internet development tools.

408.366.8933

► <http://www.distinct.com>
 Fax: 408.366.0153
 E-mail: cworld@distinct.com
 Fastfacts: 408.366.2101

Distinct is a registered trademark and Distinct IntelliTerm is a trademark of the Distinct Corporation. Copyright 1997 Distinct Corporation, 12900 Saratoga Avenue, Saratoga, CA 95070. IBM and Windows are registered trademarks of the respective companies. All rights reserved. Specifications and terms are subject to change without notice.

STOP COMPUTER THEFT!

IN THE OFFICE — ON THE ROAD

- Secure computer or notebook to desk, table, etc.
- Protect data
- Lifetime warranty

Käblit™ II - List \$34.95



Fixed Location

Käblit™ T-Lock - List \$39.95



Any Location

Quick And Easy To Install
 Available For Macintosh Too



Order now — Call 800-451-7592...

18 Maple Court, East Longmeadow, MA 01028, USA phone 413-525-7039
 FAX: 413-525-8807 EMAIL: secure-it@owls.com INTERNET: <http://www.secure-it.com>

Hours: 8:30 a.m. to 8:00 p.m. EST

Padlock Security
 Provided by
 Master Lock


The particular Master Lock Trademarks used are trademarks of the Master Lock Company and are used by Secure-It, Inc. under license.

For information on advertising,
call 203-857-5100

Marketplace

12x CD-ROM Tower

- ◆ TCP/IP, IPX
- ◆ Plug & Play
- ◆ Novell, NT, UNIX, NFS
- ◆ 7 CD-ROMs
- ◆ Built-in Server
- ◆ Factory Direct
- ◆ Ethernet (Token Ring available)



Special!
\$2,995

Network Ready!



Which has serviced over 175 diverse clients,
specializes in providing VM, MVS, VSE service to clients who need:

- OUTSOURCING
- REMOTE COMPUTING
- YEAR 2000: Mainframe Conversion Test Environment
- TAPE CONVERSIONS
- SYSTEMS INTEGRATION CONSULTING

Industry experience includes: / Financial Services • Non Profit • Software Developers
Healthcare • Manufacturing/Distributing • Publishing

We are the "Boutique" of the Computer Services World

Serving Clients since 1980

(201) 319-8787 • (800) 274-5556

See our complete line of storage products at:
www.tacsystems.com/cw

(800)-659-4440



Managing Information Through Innovation

TAC Systems Inc., and LANmini are trademarks of TAC Systems. Axis is a trademark of Axis Communications. Other brands are trademarks of their respective owners.

TAC Systems is not responsible for inadvertent errors. Copyright 5/97 TAC Systems Inc., 1035 Putman Dr., Huntsville, AL 35816. T0016

Off-shore custom programming Local custom project management

600 experienced, degreed, programmers in India complete projects at 25-50% less cost. On-site project managers ensure applications deliver the results you need. To get you what you need, our project managers:

- Over-plan • Over-communication • Over-engineer • Over-test • Over-deliver

We deliver your documentation first to ensure your application does what you want, in the way that you need it — before the coding begins. Experienced in mainframes, client-servers and PCs. Everything from retail and direct mail to financial and manufacturing, and, of course, Year 2000.



Intelligent Systems

301-840-9563 <http://www.intelligentsys.com>

yes!

I want to reach over
909,000 IT
purchase influencers!

Please send me a Computerworld Marketplace media kit.

Name _____

Title _____

Company _____

Email _____

Address _____

Phone _____

Fax _____

Fax this form to (203) 838-1425, or call (203) 857-5125
and we'll mail you your information right away!

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

OFFICIAL RULES - NO PURCHASE, PAYMENT OR CONTRIBUTION NECESSARY - To enter the Sweepstakes outlined below, follow all entry instructions published to this offer. Your entry must be received by the date specified elsewhere in this offer or by 1/15/98, whichever is sooner.

Super Prize Sweepstakes - Winners will be selected in random drawings from all eligible entries received. Early Bird winner will be selected in a separate drawing from among all eligible entries. Sweepstakes begins 9/3/96. Drawings will be conducted on or about 4/30/98 by Ventura Associates, Inc., an independent judging organization whose decisions are final. Drawing will be held at 1040 Avenue of the Americas, New York, NY 10018. You need not be present to win.

CONSUMER DISCLOSURE Different creative presentations of the sweepstakes may present different prize choices. Values at a given prize level will be approximately the same. All prize winners will have the option of selecting any prize offered at level won. Number, estimated maximum retail value and odds of winning each prize are as follows: 1 Grand Prize - \$25,000 (or cash alternative of \$25,000); 1 First Prize - \$2,000; 1 Second Prize - \$1,000; 50 Third Prizes - \$80; 1,000 Fourth Prizes - \$65 each; 1 Early Bird Prize - \$5,000. Total prize value: \$102,000.00. Certain creative presentations of the Super Prize Sweepstakes may present an Early Bird Prize. To qualify for the Early Bird Prize, if the Early Bird Prize is presented in your offer, your entry must be received by the Early Bird date specified elsewhere in this offer. Odds of winning any prize are determined by the total number of eligible entries received. Distribution of sweepstakes will not exceed 300 million. All Super Prize Sweepstakes prizes will be awarded.

Automobile, boat/trailer prizes must be picked up at local dealer. All other merchandise prizes will be shipped to winner. Boat/trailer and/or automobile title, tags, license and registration fees are winner's responsibility as are any other incidental expenses not specified in the offer. Trip prizes subject to availability and must be completed within 12 months of date awarded. Actual values of trips depend on location of winners and fares at time of departure. Certain restrictions and blackout dates may apply. If a trip prize is won by a minor, minor must be accompanied by a parent or legal guardian. Winner's traveling companion will be required to sign a release of liability prior to departure. Trip prizes are on a space available basis and do not include personal purchases or incidentals. No substitution of prizes, except sponsor reserves the right to substitute a prize of equal or greater value in the event an advertised prize is unavailable.

For winners list (available after 6/30/98) send self-addressed, stamped envelope by 1/15/98 to: Super Prize Winners, P.O. Box 9193, Medford, NY 11763-9193.

THE FOLLOWING APPLIES TO THE SWEEPSTAKES ABOVE - No purchase, payment or contribution necessary to enter or win. No photocopied or mechanically reproduced entries will be accepted. Not responsible for technical malfunctions, failure of computer, telephone equipment or software, inaccurate transmission of entry information or for lost, late, misdirected, damaged, incomplete, illegible or postage-due mail. All entries become the property of sponsors and none will be returned.

Winner notification will be by mail. A winner may be required to sign and return an Affidavit of Eligibility/Liability/Publicity Release within 14 days of date printed on notification or he/she will be disqualified. Any prize/prize notification returned as undeliverable will result in disqualification. If a major prize is won by a minor, it will be awarded to parent or legal guardian and the Affidavit of Eligibility and Release must be signed by the parent or legal guardian. Except where prohibited by law, winners consent to the use of their names, hometowns, likenesses and photographs for advertising and publicity without additional compensation.

Sweepstakes is open to legal residents of the U.S., Canada and Europe (in those areas where made available) who have received the offer. In the event that the designated recipient of the offer has moved, the offer may not be valid in the state, country or province to which the offer has been forwarded. Void in Puerto Rico and where prohibited by law. All federal, state, provincial and local laws and regulations apply.

All prize values are in U.S. currency. No transfer of prize permitted. A winner is responsible for all taxes on his/her prize.

Canadian residents, in order to win, must first correctly answer a time-limited skill testing question administered by mail. Any litigation regarding the conduct and awarding of a prize in this publicity contest by a resident of the province of Quebec may be submitted to the Régie des alcools, des courses et des jeux.

Sweepstakes may be presented in different creative presentations by different organizations. Ventura Associates, Inc., 1040 Avenue of the Americas, New York, NY 10018, the independent judging organization has provided all prizes at no charge. Ventura Associates, Inc., reserves the right to withdraw the promotion if it becomes technically corrupted.

Employees of Sweepstakes Administrator, presenting organizations, their advertising agencies and promotional companies involved in this promotion and their families, agents, successors and assignees are ineligible to participate in the promotion and shall not be eligible for any prizes covered herein. The parties hereto acknowledge that SCA is not liable for any prize awards payable to promotion participants in violation of this term.

COMPUTERWORLD TECHNOTOYS WEEKLY SWEEPSTAKES OFFICIAL RULES: No purchase necessary. Complete official entry form or print all entry information on plain paper, including this week's prize and fax to: (800) 888-2299. Incomplete entries not eligible. Sweepstakes begins 12:01 am (EST) Monday (the date of the issue). All entries must arrive by fax no later than 11:59 am Monday of the following week. The issue date can be found at the top of most pages of this magazine. Sponsor not responsible for telephone or fax equipment failure or delayed transmission. All entries become sponsor's property & will not be returned.

Winner will be determined in a random drawing on or about 5:00 pm (EST) the Monday following the issue date. You need not be present to win. The prize (and its retail value) detailed with the entry form is guaranteed to be awarded & delivered to winner approx. 30 days from drawing date. If notification letter or prize is returned as undeliverable, it will be awarded to an alternate winner at random. No prize substitutions except due to unavailability, in which case a prize of equal value will be awarded. Prize not transferable or redeemable for cash. All taxes on prize are winner's responsibility. Acceptance of prize constitutes permission (except where prohibited) to use winner's name, hometown & likeness for promotional purposes without additional compensation.

Sweepstakes is open to legal US residents, 18 & older. Odds of winning determined by total number of entries received. Est. distribution: 150,448. Sponsor: Computerworld, Inc. 500 Old Connecticut Path, Framingham, MA 01701. Employees of Computerworld, Inc., its affiliates, subsidiaries, advertisers & promotion agencies & immediate families at each not eligible. All federal, state & local laws & regulations apply. Void in Puerto Rico & where prohibited by law.

For winners list (available within 4 weeks of the drawing), send a SASE to: Sweepstakes Winners, Computerworld TechnoToys Sweepstakes, 500 Old Connecticut Path, Framingham, MA 01701.

ADVERTISERS INDEX

Acer America 104
<http://www.acer.com>
 Adaptec 62-63
<http://www.adaptec.com>
 Amdahl 79
<http://www.amdahl.com>
 American Power Conversion 33
<http://www.apcc.com>
 888-289-APCC
 Bay Networks 108
<http://www.baynetworks.com>
 Cabletron 52
<http://www.cabletron.com>
 Compaq Computer Corp. 26-27, 34-35
<http://www.compaq.com>
 Data General 56
<http://www.dg.com>
 Digital Equipment Corp. 50-51, 57, 59, 66
<http://www.digital.com>
 EMC Corp. 25
<http://www.emc.com>
 Hewlett-Packard 18-19
<http://www.hp.com>
 Hitachi PC 23-23
<http://www.hitachipc.com>
 IBM 42, 58
<http://www.ibm.com>
 ICE 48
 Imation 102
<http://www.imation.com>
 Information Builders 21
<http://www.ibi.com>

Intranet Series 40/41
 Jennings Information Systems Consulting 17
<http://www.jisc.com>
 Micro Focus 7
[\(800\) 872-6265](http://www.microfocus.com)
 Microsoft 30-31, 48/49, 54-55
<http://www.microsoft.com>
 NEC Technologies 44-45
<http://www.nec.com>
 Opin Systems 40+
 Oracle Corp. 9
<http://www.oracle.com>
 Procom Technology 11
<http://www.procom.com>
 Red Brick 10
<http://www.redbrick.com>
 SAS Institute 64-65
<http://www.sas.com>
 SCO 107
<http://www.sco.com>
 Sun Microsystems 13, 15
<http://www.sun.com>
 Syncsort 5
<http://www.syncsort.com>
 Tandem 29
<http://www.tandem.com>
 Tech Corps 24
 Toshiba 38-39
<http://www.toshiba.com>

+Internet/Intranet Select Edition

To have your Internet address listed here, please contact Paula Wright at (508) 620-7716
 This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast.

Please write to:

COMPUTERWORLD, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here Address shown: Home Business

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: 1-800-552-4431 Outside U.S. call (614) 382-3322. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address - COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701.

COMPUTERWORLD, INC.

President
Michael R. Rogers

Senior Vice President/
Finance
Matthew C. Smith

Vice President/
Human Resources
Susan C. Perry

Executive Assistant
to the President
Laureen Austermann

COMPUTERWORLD

An IDG Company: The World's Leader in Information Services on Information Technology

Senior Vice President/Publisher
Peter C. Weedfeld

Computerworld Headquarters: 500 Old Connecticut Path, P.O. Box 9171, Framingham, MA 01701-9171
 Phone: 508-879-0700, FAX: 508-875-4394

Editor
Paul Gillin
Vice President Consumer Marketing
Gail Odeneal

Northeast Regional Vice President Sherry Driscoll
New York/New Jersey Regional Manager Christopher E. Thomas
South Atlantic Regional Vice President Bernie Hockswender
Northern California Regional Vice President
National Director, Business Development John S. Gordon

MARKETING: Director, Marketing Communications/Mary Doyle, Senior Manager, Marketing Communications/Elizabeth Phillips, Manager, Trade Show & Events/Audrey Abbott, Marketing Manager/Susan Thaxter, Marketing Communications Project Manager/Karen Lesko, Senior Marketing Manager/Stuart C. Dale, Marketing Specialist/Emily Dinneen, Administrative Assistant/Patty White **CIRCULATION:** Director of Circulation Management/Maureen Burke **PRODUCTION:** Production Director/Christopher P. Cuoco, Production Manager/Beverly Wolff **SALES PROFESSIONAL DEVELOPMENT:** Operations Director/Cynthia Delany **DISTRIBUTION:** Distribution Manager/Bob Wescott, Traffic Manager/Pat Walker **INFORMATION SYSTEMS:** Vice-President of IS/Walter Crosby

SALES OFFICES

Computerworld Headquarters: 500 Old Connecticut Path, P.O. Box 9171, Framingham, MA 01701-9171
 Phone: 508-879-0700, FAX: 508-879-0446

NORTHEAST

Director: Isabelle Kane, District Manager: Laurie Marinone, Sales Office Coordinator: Tammy Boisvert, Sales Associates: Karen Beasley, Dianne McNeil, Cheryl Stratton, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (508) 879-0700 FAX: (617) 890-2669 Hearing Impaired: (800) 428-8244

NEW YORK & NEW JERSEY

Director: Fred LoSapio, Senior District Manager: Barry Cheney, Senior Account Executive: John Bosso, Sales & Office Associate: Susan Kusnic, Sales Associates: Jean Dellarobba, Valerie Lusczeck, John Radzniak, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 FAX: (201) 587-9255, (201) 587-1289 Hearing Impaired: (800) 208-0288

SOUTH-ATLANTIC

Sales Administrator: Jennifer Pattenau, 1565 Woodington Circle, Suite 201, Lawrenceville, GA 30044 (770) 931-8104 FAX: (770) 931-8106 Hearing Impaired: (800) 449-4974, Senior District Manager: Mike Bachman, Sales Associate: Mary Cavaliere, 175 Strafford Ave. #1, Wayne, PA 19087, (610) 975-4581 FAX: (610) 975-4582 Phillip Braithwaite, Account Executive, 2457A S. Hiwassee Rd., Ste. 321, Orlando, FL 32835 (407) 521-9181 FAX: (407) 521-8719

MIDWEST

Senior District Manager: Sharon R. O'Brien, Sr. Account Executive: Laurie Gomes, Sales Associate: Jasmine Huffman, 875 N. Michigan Avenue, Suite 2846, Chicago, IL 60611 (312) 943-4266 FAX: (312) 943-2214

SOUTHWEST

Senior District Manager: Jennifer Hedges, Sales Associate: Brenda Shipman, 14651 Dallas Parkway, Suite 304, Dallas, TX 75240 (972) 233-0882 FAX: (972) 701-9008 Hearing Impaired: (800) 822-4918

NORTHERN CALIFORNIA
 Directors: Christine Curry, Linda Holbrook-Dusay, Senior District Manager: Ernie Chamberlain, District Managers: Denye Kehoe, Lisa Kowalski, Holly Nissalke, HR Representative: Leticia Lehane, Sr. Account Executives: Claude Garbarino, Gena Haas, Account Executives: Shannon Dempsey, Andrea Zurek, Sales Associates: Larisa Gagainsis, Alicia Giovannini, Heather Hackman, Emmie Hung, Nina Pukonen, Bonnie Robson, Office Services: Jessica Abude, Sales Coordinator: Yvonne Zuniga, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312 Hearing Impaired: (800) 900-3179

SOUTHERN CALIFORNIA
 Director: Nancy Coy-Bianchi, Sr. Account Executive: Susan Davis, Sales Associate: Pat Duhl, 2171 Campus Drive, Suite 100, Irvine, CA 92612 (714) 250-3942 FAX: (714) 476-8724

ADVERTISING OPERATIONS

Display Advertising Production Manager: Paula Wright, Display Advertising Coordinators: Lisa Tanner, Gregg Pinsky, (508)-879-0700 FAX: (508) 879-0446

RECRUITMENT ADVERTISING SALES OFFICES

Vice President/Recruitment Advertising/John Corrigan, Marketing Director/Derek E. Hultzky, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

New England & Upstate New York: Regional Manager/Nancy Percival, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (800) 343-6474, Account Executive/Nancy Mack, (800) 343-6474

Mid-Atlantic: Regional Manager/Jay Savell, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474, Sr. Account Executive/Caryn Dlott, (800) 343-6474 TDD: (800) 208-0288

South-Atlantic: Regional Manager/Katie Kress-Taplett, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 573-4115, Sales Manager/Pauline Smith (800) 343-6474

Midwest: Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Account Executive/Nick Burke (800) 343-6474 TDD: (800) 227-9437

Southwest: Regional Manager/Ellen Cross, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Account Executive/Jim Parker, (800) 343-6474

Northwest: Regional Manager/Christopher Glenn, 246 Casitas Ave., San Francisco, CA 94127 (415) 665-2443, Account Executive/Fabiola Franz, (800) 343-6474

West: Regional Manager/Ellen Cross, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Account Executive/Jeff Yoke (800) 343-6474 TDD: (800) 203-5867

Internet Careers Site: Jennifer Arispe, Sales Associate, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

ALLIANCE MARKETING

Director/Elizabeth Cooper, Sales Associate/Nancy Dillon, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312

INTERNATIONAL DATA GROUP

Chairman of the Board, Patrick J. McGovern; President, Kelly Conlin; Chief Operating Officer Jim Case
 Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information, the leading global provider of information services on information technology. International Data Group publishes over 275 computer publications in over 75 countries. Sixty million people read one or more International Data Group publications each month.

The Week in Stocks

Gainers



Losers



PERCENT

Centura Software	31.9	Streamlogic Corp.(L)	-63.6
Applix Inc.	26.7	FTP Software Inc.	-21.0
Netrix Corp.	26.5	SCO Inc.(L)	-17.1
Advanced Logic Research	26.3	Proteon Inc.	-16.7
Learning Co. (The)	23.0	Intelligent Info. Systems....	-14.6
Secure Computing Corp.	21.3	Reynolds and Reynolds(L)	-14.6
Forte Software	21.0	Computer Network Tech. (L)	-14.3
Xircos	15.3	Intelligent Electronics	-13.7

DOLLAR

Compaq Computer Corp.	7.50	Adobe Systems Inc.	-5.31
Dell Computer Corp.(H)	6.00	Seagate Technology	-2.88
Yahoo! Inc.	4.00	Reynolds and Reynolds(L)	-2.88
Netscape Comm. Corp.	3.56	Oracle Corp.(H)	-2.19
National Semiconductor	3.38	SC8 Computer Tech. Inc.	-1.75
Advanced Logic Research	3.19	Phoenix Technologies	-1.38
Cisco Systems Inc.	3.13	Bellsouth Corp.(H)	-1.25
Lucent Tech.(H)	3.13	Emulex Corp.	-1.25

INDUSTRY ALMANAC

Wall Street upbeat on DG

Wall Street's opinion of Data General Corp. has been as upbeat as the company's stock. Investors who purchased shares one year ago at approximately \$10 per share have seen the stock price soar to \$26.

Driving the stock's rise have been seven consecutive quarters of increased earnings, fueled by market acceptance of the company's Pentium-based Aviion server and Clariion storage lines.

"I think the company has made a fairly remarkable turnaround, and I think the issue here is sustaining this string of profitability," says Shao Wang, an equity analyst at Smith Barney, Inc. in New York.

Several vendors have been focusing on Intel Corp.-based multiple processors and Windows NT offerings. "I think the challenge for any of these players, but certainly for Data General specifically, is to provide a level of differentiation," Wang says.

Peter Labe, an analyst at the Wall Street company Buckingham Research Group, says DG's strengths are its reputation, installed based and "excellent products technically."

However, analysts have mixed opinions about DG's future as an investment.

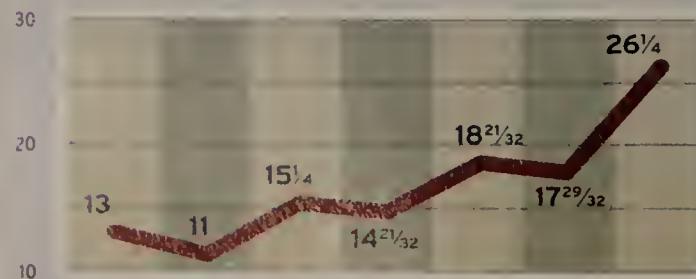
Rick Berry, an analyst at Malachi Group in Douglasville, Ga., says the stock won't get much higher than \$30 in the next year, barring major disappointments.

But DG is preparing for a strong future. Last month, the company completed a \$212 million convertible bond sale. "This is a very conservative company, and for them to raise that much money I think tells you they see growth in the next few years," Labe says. "I think in two to three years out, the stock will be selling at \$50 without any problem."

— Patrick Thibodeau

DOUBLE TIME

Data General's stock has been slowly and dramatically rising



June 19, 1996 Aug. 19, 1996 Oct. 18, 1996 Dec. 18, 1996 Feb. 18, 1997 April 18, 1997 June 18, 1997

EXCH	52 WEEK	RANGE	JUNE 20 2 PM	Wk Net Change	Wk Pct Change	EXCH	52 WEEK	RANGE	JUNE 20 2 PM	Wk Net Change	Wk Pct Change	
Communications and Network Services UP 0.79%												
COMS	81.38	24.00	3 COM CORP	49.63	2.06	SOTA	18.88	8.88	STATE OF THE ART	10.75	0.00	0.0
AIT	71.75	49.63	AMERITECH CORP. (H)	70.63	0.75	SSW	79.25	27.25	STERLING SOFTWARE INC.	31.38	0.00	0.0
ASND	80.25	36.13	ASCEND COMMUNICATIONS	41.94	-1.19	SDRC	27.63	15.00	STRUCT. DYNAMICS RESEARCH (H)	26.63	1.75	7.0
T	43.25	30.75	AT & T	37.25	-0.38	SYBS	24.50	12.13	SYBASE INC.	15.00	-0.13	-0.8
BNYN	9.25	1.19	BANYAN SYSTEMS INC.	1.91	-0.03	SYMC	20.44	8.75	SYMANTEC CORP	19.94	0.06	0.3
BAY	30.63	15.38	BAY NETWORKS INC.	26.00	-2.88	SNPS	50.50	21.75	SYNOPSYS	35.88	0.50	1.4
BEL	78.25	55.13	BELL ATLANTIC CORP. (H)	76.50	-0.75	SSAX	18.88	3.88	SYSTEM SOFTWARE ASSOC.	8.69	0.69	8.6
BLS	48.63	35.25	BELLSOUTH CORP. (H)	46.63	-1.25	SYSF	36.50	7.38	SYSTEMSOFT CORP	11.00	-0.38	-3.3
BRKT	42.25	9.75	BROOKTROUT TECHNOLOGY	12.50	-0.75	TRUV	8.00	1.50	TRUEVISION CORP.	2.44	0.19	8.3
CS	45.50	26.50	CABLETRON SYSTEMS	32.63	1.00	VIEW	17.00	8.38	VIEWLOGIC SYSTEMS	14.75	-0.31	-2.1
CSCC	91.25	23.50	CASCADE COMMUNICATIONS	29.19	-0.81	VMRK	12.00	5.50	VMARK SOFTWARE INC.	7.88	-0.25	-3.1
CSCO	75.75	44.75	CENTIGRAM COMMUNICATIONS	12.88	1.13	WALK	15.63	9.38	WALKER INTERACTIVE SYSTEMS	14.50	-0.25	-1.7
CMNT	8.25	4.13	CISCO SYSTEMS INC.	69.63	3.13	WALL	29.13	12.25	WALL DATA INC. (H)	26.00	0.06	-0.2
DIGI	33.13	12.63	COMPUTER NETWORK TECH. (L)	4.13	-0.69	WANG	24.06	15.38	WANG LABORATORIES INC.	20.56	0.31	1.5
FORE	43.63	10.00	DSC COMMUNICATIONS	25.25	1.44							
GDC	16.75	6.13	FORE SYSTEMS INC.	14.50	-0.13							
GSX	46.75	36.13	GENERAL DATACOMMINDS	7.88	-0.25							
GTE	49.38	37.75	GENERAL SIGNAL NETWORKS	45.88	-0.38							
LU	72.50	30.63	GTE CORP.	45.38	-0.88							
MADGF	16.81	4.50	LUCENT TECH. (H)	72.50	3.13							
MCIC	41.88	22.38	MADGE NETWORKS NV	6.81	0.50							
MNP1	16.25	5.50	MCI COMMUNICATIONS CORP	39.06	-0.69							
NETM	14.88	2.50	MICROCOM INC.	16.13	0.00							
NTRX	10.63	1.44	NETMANAGE INC.	3.13	-0.13							
NCDI	16.25	3.00	NETRIX CORP.	2.69	0.56							
NWK	22.38	11.13	NETWORK COMPUTING DEVICES	13.00	0.75							
NETG	30.25	12.88	NETWORK EQUIPMENT TECH.	16.38	0.13							
NN	44.50	20.25	NETWORK GENERAL	14.31	-0.50							
NT	90.63	45.00	NEWBRIDGE NETWORKS CORP. (H)	44.50	2.75							
NOVL	14.25	7.00	NOVELL INC.	7.09	-0.66							
NYN	59.88	42.00	NYNEX CORP. (H)	58.38	-0.63							
OCTL	31.75	13.50	OCTEL COMMUNICATIONS CORP.	22.00	0.00							
ODSI	24.50	9.75	OPTICAL DATA SYSTEMS INC.	12.88	0.25							
PCTL	41.25	8.25	PICTURETEK CORP.	10.88	0.00							
PTON	5.38	1.31	PROTEON INC.	1.88	-0.38							
RACO	6.38	2.13	RACOTEK INC. (L)	2.25	-0.31							
RETX	9.25	3.38	RETIX	5.44	0.69							
SBC	61.38	46.00	SBC COMMUNICATIONS (H)	60.88	0.75							
SFA	23.50	12.00	SCIENTIFIC ATLANTA INC. (H)	22.75	1.63							
SHVA	85.88	8.25	SHIVA CORP.	11.50	0.00							
FON	52.75	34.50	SPRINT CORP. (H)	51.00	-0.38							
SMSC	17.50	8.25	STANDARD MICROSYSTEMS CORP.	9.25	-0.88							
USW	38.50	27.25	U.S. WEST INC. (H)	37.75	-0.50							
XIRC	31.13	7.50	XIRCOM									

How to contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
 All editors unless otherwise noted below
Main fax number (508) 875-8931
24-hour news tip line (508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
 All staff members can be reached via E-mail on the Internet using the form:
 firstname_lastname@cw.com.
 All IDG News Service correspondents can be reached using the form:
 firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:

letters@cw.com.

Please include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path,
 Framingham, Mass. 01701

SUBSCRIPTION/BACK ISSUES

Phone (800) 552-4431
E-mail circulation@cw.com
Back Issues (508) 820-8129

REPRINTS

Phone Michelle Olk, (800) 217-7874

CONTACTING CW EDITORS

We invite our readers to call or write with comments and ideas. It is best to submit ideas to one of the department editors as well as to the appropriate beat reporter.

Editor Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

DEPARTMENT EDITORS/NEWS

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Neal Weinberg (508) 820-8177
Assistant News Editor Mitch Betts (202) 347-6718
Assistant Sections Editor Michael Goldberg (508) 620-7789
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863

SENIOR EDITORS/NEWS

Groupware, E-mail, messaging Barb Cole-Gomolski (760) 728-8858
LANs, operating systems Laura DiDio (508) 820-8182
Network/systems management Patrick Dryden (817) 924-5485
Application development Sharon Gaudin (508) 820-8122
IS management Thomas Hoffman (201) 587-0090
IS careers Julia King (610) 532-7599
Investigative reports Kim S. Nash (214) 716-9822
Apple, software suites Lisa Picarille (415) 347-0555
Databases Craig Stedman (508) 820-8120
Midrange hardware Jaikumar Vijayan (508) 820-8220
Unix operating systems
Electronic commerce, Internet Mitch Wagner (415) 548-5513
Internetworking Bob Wallace (508) 820-8214

SENIOR WRITERS/NEWS

Mobile computing, social issues Mindy Blodgett (508) 820-8168
@Computerworld Stewart Deck (508) 820-8155
PCs, servers, net computers April Jacobs (508) 820-8121
Security, government Sharon Machlis (508) 820-8231
Mainframes, high-end storage Tim Ouellette (508) 820-8215

STAFF WRITERS/NEWS

Telecommunications Kim Girard (508) 820-8223
New products, multimedia, low-end storage Matt Hamblen (508) 820-8567
Intranets Justin Hubbard (415) 548-5515
@Computerworld Patrick Thibodeau (508) 820-8143
Client/server software Randy Weston (508) 628-4869
Unix apps
@Computerworld Wylie Wong (415) 548-5581

OPINIONS

Columns Editors Kevin Fogarty (508) 820-8246
Michael Goldberg (508) 620-7789
Steve Ulfelder (508) 620-7745
Staff Columnist Frank Hayes (503) 252-0100

DEPARTMENT EDITORS/FEATURES

Technology reviews/ Buyer's Guide James Connolly (508) 820-8144
Buyer's Guide

SENIOR EDITORS/FEATURES

Buyer's Guide Cathleen Gagne (508) 620-7729
Careers David B. Weldon (508) 820-8166
In Depth Steve Ulfelder (508) 620-7745
Management Robert L. Scheier (508) 628-4931
Managing Allan E. Alter (508) 620-7714
Special reports Gary H. Anthes (202) 347-0134

ASSOCIATE EDITORS/FEATURES

Managing Rick Saia (508) 820-8118
Buyer's Guide Amy Malloy (508) 620-7754

IDG NEWS SERVICE CORRESPONDENTS

Paris bureau chief Jeanette Borzo (33) 1-4904-8001
UK correspondent Kristi Essick (44) 171-416-0701
Hong Kong bureau chief Jon Skillings (852) 2535-4661
Tokyo correspondent Rob Guth (81) 33-358-6122

RESEARCH

Bob Fink, senior research manager (508) 820-8116; Kevin Burden, senior researcher; Laura Hunt, research analyst; Stefanie McCann, senior graphics coordinator; Mari Keefe, online researcher.

COPY DESK

Ellen Fanning, managing editor (508) 820-8174; Roberta Fusaro, assistant managing editor; Christina Aicardi Maguire, Jamie Eckle, senior copy editors; Kimberly Blackburn, Michelle Davidson, senior production copy editors; Pat Hyde, David Ramel, Monica Sambataro, Keith Shaw, copy editors; Jeremy Selwyn, online copy editor.

GRAPHIC DESIGN

Tom Monahan, design director (508) 820-8218; Janell Genovese, associate art director/features; Mitchell J. Hayes, associate art director/news; Nancy Kowal, senior graphic designer; Carol Lieb, photo researcher/editor; Amira Harari, David Waugh, Mary Beth Welch, graphic designers; Rich Tennant, John Kossner, cartoonists.

ADMINISTRATIVE SUPPORT

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139); Beliza Veras-Moriarty (ext. 8172); Chris Flanagan, editorial assistants, (415) 548-5563.

COMPUTERWORLD MAGAZINES GROUP

(Includes Premier 100, Campus Edition, Best Places to Work, Leadership Series, Intranet Series, Emmerce and Health Care Journal.) Alan Alper, editor (508) 820-8115; Mary Brandel, executive editor; Anne McCrory, Catherine McCrory, Joyce Chutchan-Ferranti, managing editors; Kimberlee A. Smith, assistant managing editor and online coordinator; Stephanie Faucher, art director.

@COMPUTERWORLD

@Computerworld is our World Wide Web site. On it, we publish daily news and feature stories that supplement our print coverage. We also have special audio features, such as interviews with industry notables, and the @Computerworld Minute, which is an audio version of the day's top news.

A few times each week, we also have Links listings. These are resources related to online and/or print stories. We also have polls and forums that you must register for to access. The rest of the site is accessible without registering.

Contact: Johanna Ambrosio, Online Editor, (508) 820-8553 or johanna_ambrosio@cw.com.

Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

21st Century Software 1	Computer Associates International, Inc. 14, 17, 53	Hitachi Ltd. 67	Security Association 1	SGS-Thomson Microelectronics 106	Wayfarer Communications, Inc. 73
3Com Corp. 14	Compuware Corp. 2	HiTecSoft Corp. 17	National Council on Compensation Insurance, Inc. 43	Shareware Industry 106	Wells Fargo & Co. 80
Accton Technology Corp. 59	Comshare, Inc. 3	Hurwitz Group, Inc. 8	Naval Center for Cost Analysis 61	Awards Foundation 106	Wingra Technologies, Inc. 47
Alamo Rent A Car, Inc. 8	Connecticut Mutual 71	IBM 1, 2, 3, 8, 12, 24, 28, 53, 61, 67	NEC Corp. 12	Shell Oil Co. 43	World Wide Web Consortium 47
Alcan Aluminum Ltd. 71	Life Insurance Co. 84	Informix Software, Inc. 14, 32	Netscape 1	Simulation Sciences, Inc. 43	Wright Medical Technology, Inc. 47
Alex. Brown & Sons, Inc. 32	Connecticut Natural Gas 84	Integrated Medical Networks LLC 12	Communications Corp. 1, 47, 77	Softech Solution, Inc. 1	Xcellenet, Inc. 53
Alliance Pipeline Ltd. 69	Conoco, Inc. 77	Integriion Corp. 1	Netstart, Inc. 16	Software Emancipation 1	Xerox Corp. 80
Amdahl Corp. 67	Cumberland Packaging Corp. 46	Intel Corp. 4, 12, 53, 67	Newmarket Software Systems, Inc. 46	Technology, Inc. 43	Xicom, Inc. 28
American Bankers Association 3	Current Analysis 14	Intergraph Corp. 28	Nortel, Inc. 28	Southernview Technologies, Inc. 14	Zurich Insurance Co. 61
American Express Co. 43, 80	Cybersmith 72	International Data Corp. 12, 14	Norwest Corp. 67	Storage Technology Corp. 67	
American Greetings, Inc. 61	Cyrix Corp. 68	International Male 32	Norwest Mortgage, Inc. 61	Strategic Interactive 49	
American Insurance Group 10	Data General Corp. 1, 46	Internet Privacy Working Group 47	Novell, Inc. 2, 17, 32, 43, 47, 59, 84	Strategic Research Corp. 67	
Apple Computer, Inc. 16	Oazel Corp. 28	Iomega Corp. 67	Occidental Chemical Corp. 3	Stroehmann Bakeries, Inc. 43	
Applix, Inc. 3	Dell Computer Corp. 6, 12, 32, 67	Isogon Corp. 2	Openheimer & Co. 32	Sun Microsystems, Inc. 1, 16, 47, 61	
Arbor Software Corp. 3	Deutsche Morgan Grenfell 77	Isuzu Motors America, Inc. 14	Oracle Corp. 3, 12, 14, 32, 53	Sybase, Inc. 14, 53	
Argent Manufacturing Co. 84	Digital Equipment Corp. 1, 4, 16, 28, 61	JavaSoft 1	Ottawa Hydro 2, 67	Symantec Corp. 14	
AstraTek, Inc. 43	Dollar Bank 1	Jupiter Communications, Inc. 47, 72	Pacific Software Publishing, Inc. 53	Synchrologic, Inc. 53	
AT&T Corp. 2, 43, 72	Ouke Energy Co. 14	Kennebек Valley Health 3	Papa John's International, Inc. 32	Systems & Computer 53	
Avid Marketing 106	Ounlop Tire Co. 12	Kentucky Department of Education 43	Patricia Seybold Group 8, 16	Technology Corp. 46	
Axls Communications, Inc. 67	Electronic Data Systems Corp. 14, 43	Kidd Creek Mines Ltd. 71	Pennzoil Co. 12	Systems Management Specialists 43	
BackWeb Technologies 73	Electronic Privacy 53	Kmart Corp. 6, 12	Pepsico, Inc. 32	Tactica Corp. 8, 61	
BankBoston 43	Information Center 47	L. L. Bean, Inc. 47	Peritus Software Services 103	Technology Solutions Co. 43	
Bay Networks, Inc. 14	Elli Lilly and Co. 14	Lanacom, Inc. 73	Perot Systems Corp. 72	Tektronix, Inc. 59	
BEA Systems, Inc. 1	EMC Corp. 24	Lander Associates 67	Personal Systems Plus, Inc. 17	The Baan Co. 14	
Bear, Stearns & Co. 43	Entergy Services, Inc. 14	Lawrence Livermore National Laboratory 1	Philips Microwave 61	The Bentley Group 43	
Bell Canada 71	Ernst & Young 53	Lek Technologies, Inc. 68	Piercom Ltd. 61	The Chase Manhattan Bank Corp. 61	
Bellcore 8	Essex Industries 84	Lexis-Nexis 24	Piercom Systems 103	The Fairmont Hotel 1	
Blue Cross/Blue Shield of Minnesota ... 2	Federal Express Corp. 67, 77	Logan Lumber Co. 1	Piper & Marbury LLP 24	Management Co. 46	
BMC Software, Inc. 59	Firefly Network, Inc. 47	Lotus Development Corp. 47, 53, 61	Pitney Bowes, Inc. 84	The New England Journal of Medicine 16	
Boole & Babbage, Inc. 2, 8	First National Bank of South Africa 43	Lowell General Hospital 14	Poppy Tyson Interactive 1	The Standish Group 1	
Bose Corp. 12	Forecross Corp. 43	Lucent Technologies, Inc. 67	Powersoft Corp. 43	International, Inc. 8, 61	
Broadbase Information Systems, Inc. 61	Forrester Research, Inc. 14, 28, 72	Lyra Research, Inc. 28	Praxair Chemicals, Inc. 67	The Tower Group 1	
Brock International, Inc. 53	Fort Knox 53	Macromedia, Inc. 1, 73	Prentice Hall PTR 72	The Yankee Group 63	
Business Objects S.A. 61	Foundry Networks, Inc. 53	Maersk, Inc. 53	ProLin 14	Tibco Inc. 73	
Cabletron Systems, Inc. 14, 53	Frost & Sullivan, Inc. 28	Marimba, Inc. 73	Provident Capital, Inc. 16	Time, Inc. 47	
Cabocomm Co. 1	Fulcrum Technologies, Inc. 57	Massachusetts Mutual 67	Prudential Insurance 12	Tivoli Systems, Inc. 14, 53	
Candle Corp. 8, 47	Gartner Group, Inc. 2, 53, 67	Massachusetts Medical Society 67	Company of America 12	Toshiba America 1	
Carlson Cos. 28	Gateway 2000, Inc. 12	McGraw-Hill Cos. 84	Prudential Securities, Inc. 1	Information Systems, Inc. 28	
Carpenters Benefit Funds 67	GE Capital IT Solutions 61	Meta Group, Inc. 1, 2, 14, 53	Public Link Corp. 24	TransCanada Pipelines Ltd. 69	
Center for Democracy and Technology 24	General Electric Co. 61	Microsoft Corp. 1, 6, 10, 12, 14, 17	Qualcomm, Inc. 16	Tribune Media Services 72	
Charles Schwab & Co. 43, 53	Giga Information Group 10, 43 43, 46, 47, 53, 57, 61, 67	Rapid City Communications 14	United Services 1	
Cheyenne Software 17	Granite Systems 14	Missouri Department of			

Disk space a problem? Too many disk drives? Here's the solution. Make Room. 120MB of room. Introducing SuperDisk™ and the LS-120 drive. Unlike the Zip™ drive, the LS-120 drive is compatible with standard 3.5" disks. So you only need one drive. And SuperDisk™ is perfect for huge multi-media files, back-up, and anything else you need to make room for. In other words, don't buy a PC without it. To learn more about the SuperDisk™ diskette and other LS-120 solutions for notebook, desktop, and add-on drives, call 1·800·888·1889, ext. 4050 or visit www.imation.com.

SuperDisk, Circle-pyramid logo, Imitation and the Imitation logo are trademarks of Imitation Corp. Zip is a trademark of Iomega Corp. © Imitation 1997



IMATION
Borne of **3M** Innovation

Midrange users get hip to millennium

CONTINUED FROM PAGE 1

Corp.'s Eclipse platforms, Hewlett-Packard Co.'s HP 3000, IBM's AS/400 and Wang Laboratories, Inc.'s Wang VS platforms have proved extremely popular in information systems shops because of their rugged, reliable nature.

Although the installed base has been rapidly dwindling over the years, analysts estimate that many of these systems are still being used in business-critical roles in midsize and large corporations.

"The main difference be-

tween these shops and mainframe-centric ones is the relative lack of skills available to them," said James Kinneman, a senior programmer analyst at Grumman Systems Support Corp. in Bohemia, N.Y.

"Most shops have systems that have been running for the past 10 or 15 years, which they haven't upgraded once since they purchased it."

These systems typically run industry-specific packaged applications or highly customized software.

"Today, we are at the mercy of the contract programmer."

— Steve Pounds,
Security Forces

But with most new application development taking place on other platforms, vendor support and manpower for many midrange stalwarts have been rapidly shrinking.

"We are definitely a little ner-

vous about the whole thing," said Steve Pounds, controller at Security Forces, Inc. in Charlotte, N.C. Thousands of lines of Cobol code on its aging DG Unix box have to be made compliant.

Like many other midrange users, the company has depended on a third-party programming company to support and maintain its highly customized financial package.

The Atlanta-based vendor from which Security Forces purchased its software 15 years ago is long gone.

"Today, we are at the mercy of the contract programmer," Pounds said.

"They are the only ones who know anything at all about our software, and we don't have any control over when they are actually going to be making those changes," he said.

STARTING FRESH

"What makes matters worse is that almost 70% to 80% of all the original software has been modified beyond recognition with little or no documentation," said Jim Jackson, owner of 21st Century Software, a midrange consultancy in Charlotte, N.C. "These users have no control of their software anymore."

JavaSoft doesn't plan to offer bug-finding fees. "What you want to avoid is people who set up businesses finding bugs in people's software and making their living that way," he said.

LOGAN LUMBER

Logan Lumber Co. in Tampa, Fla., a Wang VS system user, has been using packaged financial software it purchased from a

TROUBLE AHEAD

Year 2000 problems specific to midrange:

- ▶ Lack of testing tools and capabilities
- ▶ Lack of conversion tools
- ▶ Lack of platform-specific skill sets

Recommendations:

- ▶ Sign up now with year 2000 service providers — supplement with minicomputer migration outfits if necessary
- ▶ Replace hardware where it's necessary
- ▶ Start year 2000 conversion work

Source: Meta Group, Inc., Stamford, Conn.

major minicomputer application developer more than a decade ago.

Since then, the package has been sold to another software vendor, which hasn't upgraded the software in nearly eight years, and the vendor still hasn't committed to either a delivery date or pricing on a year 2000-compliant version of the package.

"We don't know yet if it is going to be a \$1,000 package or a \$15,000 package, so it's kind of hard to make a decision" on how to proceed with the conversion, said Bill Torrey, a partner at Softech Solutions, Inc. in Longwood, Fla., the consulting firm doing the conversion work for Logan Lumber.

"But fortunately, we still have the source code, so we can change it ourselves if we have to," said Lamar Logan, president of the company. □

Fight over bug payment sparks 'net ethics debate'

CONTINUED FROM PAGE 1

because of a security flaw. "Don't they call it extortion — or real close to it?" asked William Orvis, a member of the Computer Incident Advisory Capability team at Lawrence Livermore National Laboratory in Livermore, Calif. "For years and years in the computer business, it's been, 'You find a bug, you tell the author.'"

OLD-FASHIONED

Many still work that way. When David de Vitry in March uncovered a flaw in Macromedia, Inc.'s Shockwave browser plug-in, for example, he didn't think about seeking payment.

"The notoriety alone of me discovering the bug was probably more than they could give financially," said de Vitry, an application development manager at Poppe Tyson Interactive in New York.

He found that a hacker could write Shockwave code to read a user's electronic mail and upload messages stored on the user's system to an outside host.

"We are aware of the long tradition that's been on the Internet to report all of these bugs for free," said Christer Hasse, co-founder of the two-man Cabocomm Co. in Denmark, which discovered the latest Netscape bug.

But considering the time they put into it and the importance of the flaw, he and partner Christian Orellana decided it was fair to seek "reasonable compensation."

Netscape offers \$1,000 rewards to people who find serious problems with its software, but Orellana and Hasse felt their effort was worth more.

They demonstrated that with certain programming, the bug they discovered enabled a World Wide Web site to access any file on a computer connected to it running Navigator 2.0 or 3.0 or Communicator 4.0.

The tradition of Internet altruism grew up when the network was used largely to exchange academic data, Hasse said. Commercial ventures aren't necessarily entitled to benefit from that free help, he added.

FEE FOR SERVICE

Netscape has issued about 20 \$1,000 awards since its "bug bounty" program was launched in late 1995, according to Dave Rothschild, director of client product marketing at Netscape in Mountain View, Calif.

"What we have had in place has been working quite well," he said.

Netscape was able to get in-

formation about the bug from a computer at a lab that had verified the bug at the Danes' request.

A fix was posted on Netscape's Web site (www.netscape.com) Wednesday.

"I think Netscape handled it well," said David Spenhoff, director of product marketing at JavaSoft, Sun Microsystems, Inc.'s Java unit.

He likened it to a philosophy of not negotiating with terrorists. "[The Danish consultants] were trying to hold Netscape's users hostage."

JavaSoft doesn't plan to offer bug-finding fees. "What you want to avoid is people who set up businesses finding bugs in people's software and making their living that way," he said.

But Ira Winkler, director of technology at the National Computer Security Association in Carlisle, Pa., said he favors financial incentives to reward people who find software holes.

"It's good if people have a motive and incentive to try to find these problems," said Winkler, author of *Corporate Espionage*.

In an ideal world, a software company shouldn't have to issue rewards any more than police departments broadcast rewards for information on some heinous crimes, he said.

But money talks. "This is a good first step in dealing with reality," he said.

"I guess it's to be expected that some people are going to try to profit from these things," Orvis said. "Who knows where it will go?" □

MINI MAKERS RALLY THE RESOURCES

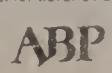
Help with millennium conversions is on the way for users of midrange platforms.

Almost all of the major vendors in the midrange space have already committed to delivering year 2000-compliant versions of their hardware and operating systems by the end of this year. And analysts following the market agree that most application software vendors will follow suit.

Many vendors also have begun to offer specialized services support for year 2000 conversion.

For instance, vendors such as Hewlett-Packard, Wang and Data General have locations on their World Wide Web sites that list year 2000 resources and keep users abreast of the latest application fixes. Some vendors, such as DG, even have specialized service desks to handle year 2000 questions. DG's North American user group has started a special advertising section in its new magazine listing tools and services.

Others companies, such as Digital and Ireland-based Piercom Systems, and Wang with Peritus Software Services, have begun to offer their users automated conversion tool suites for analyzing and converting programs. — Jaikumar Vijayan



Introducing the TravelMate® 7000



Single 7-hour battery

166 MHz Intel® Pentium® processor
with MMX™ technology

32MB RAM

2.0GB/3.0GB hard drive

12.1" active matrix screen

10X CD-ROM

33.6 Kbs internal fax/modem

DockMate III (optional)

7.5 lbs.

Windows® 95 or Windows® NT

Wireless LAN ready

THE 7-HOUR *TravelMate 7000 is at home at
the office or on the road. And, it has the brains to know the difference.*

With a single battery that keeps you fully-functional for 7-hours*, the Texas Instruments® TravelMate® 7000** outperforms any mobile solution in its class. Snap it into the automatically configuring DockMate™ III and you have a desktop that easily connects to all your peripherals. With cutting-edge technology, it's no wonder Acer® is the fourth largest notebook manufacturer in the world. Just look at the TravelMate 7000. You won't find anything more intelligent.

VeriTest Battery Life Results in Hours***

TravelMate 7000 (I66MHz MMX)	7:26
IBM ThinkPad 760ED (I33MHz)	2:38
Toshiba Tecra 720 CDT (I33MHz)	2:38
Dell Latitude XPi (I50MHz)	4:15
HP Omnibook 5500 CS (I20MHz)	2:35



 **TEXAS
INSTRUMENTS®**

Acer



1-800-558-ACER www.acer.com/aac/

**TravelMate 7000 and DockMate III are products of Acer America Corporation, developed with Texas Instruments.

*1997 Acer America Corporation. Acer and the Acer logo are registered trademarks of Acer America Corporation and Acer Inc. TravelMate and DockMate are registered trademarks of Acer Inc. Texas Instruments and the Texas Instruments logo are registered trademarks of Texas Instruments Incorporated. Intel The Intel Inside Logo, and Pentium are registered trademarks, and MMX is a trademark, of Intel Corporation. Windows, Windows 95, and Windows NT are registered trademarks of Microsoft Corporation. *7-hour battery life based on VeriTest Cross Country test March 1997 running Windows 95. ***Full results available at www.veritest.com/cn7000xc.htm

COMMENTARY

OPINION

Microsoft buy Informix? Why not?

David Coursey

It's often been speculated that what Oracle boss Larry Ellison wants most in life is to become Bill Gates.

Usually this evokes a response of "Not on your best day, kid," and life continues. But in the past few months, Ellison has upped the ante a bit. He has threatened Microsoft with the Network Computer and then with an abortive (some say half-hearted) bid for Apple.

Someone in Redmond must be paying attention; there have been rumors that Microsoft is going to send the Money Truck and buy Informix, the Oracle wannabe known in Silicon Valley as much for its billboards as its database products.

For the past several years, Informix has leased a billboard on Highway 101 near Oracle's headquarters in Redwood Shores. The billboard is always plastered with some sort of taunting reference to Oracle. It is on the northbound side, almost guaranteed to be seen by anyone leaving Oracle and heading to the airport — like customers, maybe?

A discussion about the billboards

could fill this column, but I'll save that for later. Instead, let me direct your attention to Microsoft's product line. It's pretty complete except that SQL Server hasn't exactly set the world afire. Microsoft really does need some enterprise-strength database help — and an operating system to support it, some might say.

Buying Informix would give Microsoft a very nice database solution and would give notice that Larry's chances of be-

coming Bill are much less than Bill's chances of turning Microsoft into Oracle's nightmare.

I must tell you that I claim no special knowledge here. Bill doesn't ask for my opinion before making purchases, and if Larry knows I exist, I'd be frightened. This rumor has been around the block a few times, although recently it's being pushed by Oracle people, who don't really have much to gain by spreading it.

On the other hand, some rumors ought to become reality. No, I don't think

Microsoft should own the database business, and I don't think it will. But as Oracle is fast becoming the Microsoft of data management, it's always nice to see more competition. Will Sybase and the other database companies become collateral damage? Let's hope not, but

there's a strong chance that will happen even without Microsoft's help.

What would such a takeover mean for customers? Hopefully, that Microsoft would build a powerful, integrated data-

base solution into its enterprise strategy. If there is one place where Microsoft seems weak, that's it. Of course, buying Informix also might convince Microsoft that maybe Windows NT isn't quite ready for heavy-duty enterprise work and maybe Unix isn't so bad after all.

That relates to something I've noticed repeatedly: NT seems like a great operating system if all you've known is DOS and Windows, but it's considered a weak offering to many who are looking downstream rather than upstream. Many people choke at the thought of Microsoft operating systems and databases keeping their business-critical data. And these aren't Microsoft-bashers, either, just people who'd like to depend on tools with a longer track record.

Given all this, I'd like to see Microsoft buy Informix. Then Microsoft could become a real enterprise player that supports multiple operating systems, not all of them Windows. The world, I think, would rejoice. □

Coursey, an analyst and consultant, is editor of "coursey.com," an online newsletter available at www.coursey.com. His E-mail address is david@coursey.com.



The value of vision

Frank Hayes

What's the value of IS, anyway? A few weeks back, I ended a column with the words, "If it comes down to choosing between IS and the people who actually make money for the business, you know what choice your upper management will make."

That didn't sit well with some readers. "It reinforces the idea that the only function of IS is to cater to end users, and that they are the only ones that provide the business with money," wrote one client/server specialist from New York. "How much money do you think the company would make if everyone in IS up and left at the same time? The same amount they make if all the salespeople left — nothing!"

Right. Try telling that to an IS professional whose entire department has been outsourced wholesale. Some executive with a spreadsheet calculates that an IS shop is something the company can live without, and a few months later, they're using the mainframe room as a cafeteria. You don't see that happening in sales.

And as painful, embarrassing and dispiriting as it may be, that executive is

right. The proof? Companies don't come crashing down the day the IS shop dies. Matter of fact, they seem to get along just fine.

Why? Is IS really that expendable?

Yes — sometimes. Especially if IS professionals forget that their job isn't to be janitors, but visionaries.

That's a hard goal to believe in, especially in the daily grind of an IS shop. Even the words we use make IS sound like we're just cleaning up. We "maintain" and "install" and "upgrade" and "fix."

With job descriptions like that, it's tough to recognize that IS is at the very core of any large organization. But it is

and has been for decades, since the by-gone days when it was called "data processing" or even "the tabulating department."

Everyone else in the business either feeds IS transactions — sales orders, invoices, inventory data — or reaches into IS to get information about what the business is doing.

A CORE FUNCTION

The IS shop is where those transactions live and where the tools to handle the transactions are created and managed. It's right in the middle of everything that's most important to the organization.

Don't be confused: IS doesn't bring in money for the company, like the sales guys do. IS doesn't even create value that can be turned into money, like the people who build products or deliver services.

But IS *can* create value by using that vantage point at the center of the corporate universe to give the organization some vision.

When was the last time you tried to de-

fine the vision for an application or a network? Not the architecture — that's nuts-and-bolts, heads-down, janitorial stuff. The vision is about what you see when you look up, beyond the wires and code, at what the business and users need.

Vision isn't just for CIOs or IS managers. It's even more important for software developers and network managers and help desk staffers — the IS people who see the business up close.

Vision requires understanding your organization — weird historical artifacts, bizarre departmental politics and all. It means slogging hip-deep through the wild, chaotic jungle of real-world business. It means listening to the crankiest, most unmanageable users, and then leading them instead of catering to them.

In other words, it's not for wimps or technojanitors.

But one thing is for sure: If you're really providing vision, you won't fret over somebody saying you don't actually make money for the business. And nobody will have any doubt about exactly what value IS provides. □



Hayes is Computerworld's staff columnist. His Internet address is frank.hayes.com.

alt.cw

Dispatches & images from the fringes of the electronic frontier

The Back Page

Computerworld INDEX

Advertising budget for the Pampers Web site:	\$5M
Number of America Online subscribers:	8M
Percentage planning to "definitely leave" AOL soon:	8%
U.S. average income:	\$27,900
Average income of workers in the U.S. software industry:	\$57,300
Average time for delivery of Internet E-mail:	39 min.
Cost of a conventional MBA:	\$50,000
Cost of an online MBA at Duke:	\$82,500
Percentage of U.S. households with three or more cellular phones:	5%
Number of videos shipped by Internet video store Reel.com:	1,000

Sources: Advertising Age, New York; Find/SVP, New York; Nathan Associates, Arlington, Va.; Inverse Network Technology, Inc., Santa Clara, Calif.; Forbes, New York; Computer Intelligence, La Jolla, Calif.; www.reel.com

A DIGITAL FINGERPRINT PAD

SGS-Thomson Microelectronics in Berkeley, Calif., has developed a microchip that records fingerprints electronically on contact — without a scanner. Touch the silicon panel and the chip reads the variations of the electrical current on the skin's ridges and valleys and produces a greyscale image.



Shareware Hall of Fame

The Shareware Industry Awards Foundation this week will induct 52 individuals, companies and programs into the online International Shareware Hall of Fame (www.sic.org). Among the honorees at the first-time event are shareware pioneers Jim Button, author of ButtonWare; Ward Christensen, author of XModem; Andrew Flugelman, author of PC Talk; John Friel, author of QModem; and Bob Wallace, author of PC-Write. Other inductees include Eudora, the Internet electronic-mail program, and PKWare, the authors of the popular PKZIP utility.

Inside Lines

Toilet mouth

How many top executives start off a keynote speech with, "Sitting on the toilet this morning reading Time magazine"? Netscape's Marc Andreessen must have felt the need to wake up the tiny crowd at last week's sleepy Mactivity conference in Santa Clara, Calif. It was no surprise that the butt of Andreessen's humorous rant was rival Microsoft, whose Time ad claiming that Windows put the "personal" in personal computer reinforced Andreessen's notion about just how defensive Microsoft is about the prospect of the network computer.

Not exactly what we had in mind

The "natural language" search engine at www.askjeeves.com can be a bit too helpful at times. When asked to find information on Major League Baseball's recent amateur player draft, the search engine asked us to pick the most appropriate question to our search. Among the list of 10 questions were the following two: "Where can I buy beer and beer brewing online?" and "Where can I find sexy pictures of amateur naked men?" Ah, thank you, Jeeves.

This land is our land

Software developer, real estate developer — what's the difference? At a meeting with financial analysts last week, Informix CEO Phil White talked about getting into the real estate game as a way to scare up cash for the loss-plagued company. Informix apparently is kicking around development ideas for a parcel of land in Santa Clara, Calif., that was once slated as the site for a new headquarters.

Gone dark

At its Scalability Day last month in New York, Microsoft handed out a list of about a dozen of its top corporate reference accounts, including Texaco and General Motors. Unfortunately, one user, Sabre Business Travel Solutions (BTS), changed its mind — "Gone dark as a Microsoft reference account," in the words of Sabre BTS spokesman Dave Kneeland. It seems Sabre BTS is miffed because Microsoft's Travel Technologies Group has teamed up with American Express to launch a competitive travel service.

Straight talk in Washington

After hearing some blunt testimony about federal encryption policies, Rep. Vernon Ehlers (R-Mich.) observed that he had definitely learned one thing: "Cryptographers are not cryptic."

Easing installation

Cisco Systems is expected this week to announce setup and configuration tools to make it easier to install its midrange and low-end remote office routers and remote access servers. The San Jose, Calif., vendor will also announce a family of support services, including free setup of ISDN connections, aimed at these sites.

Bearish response?

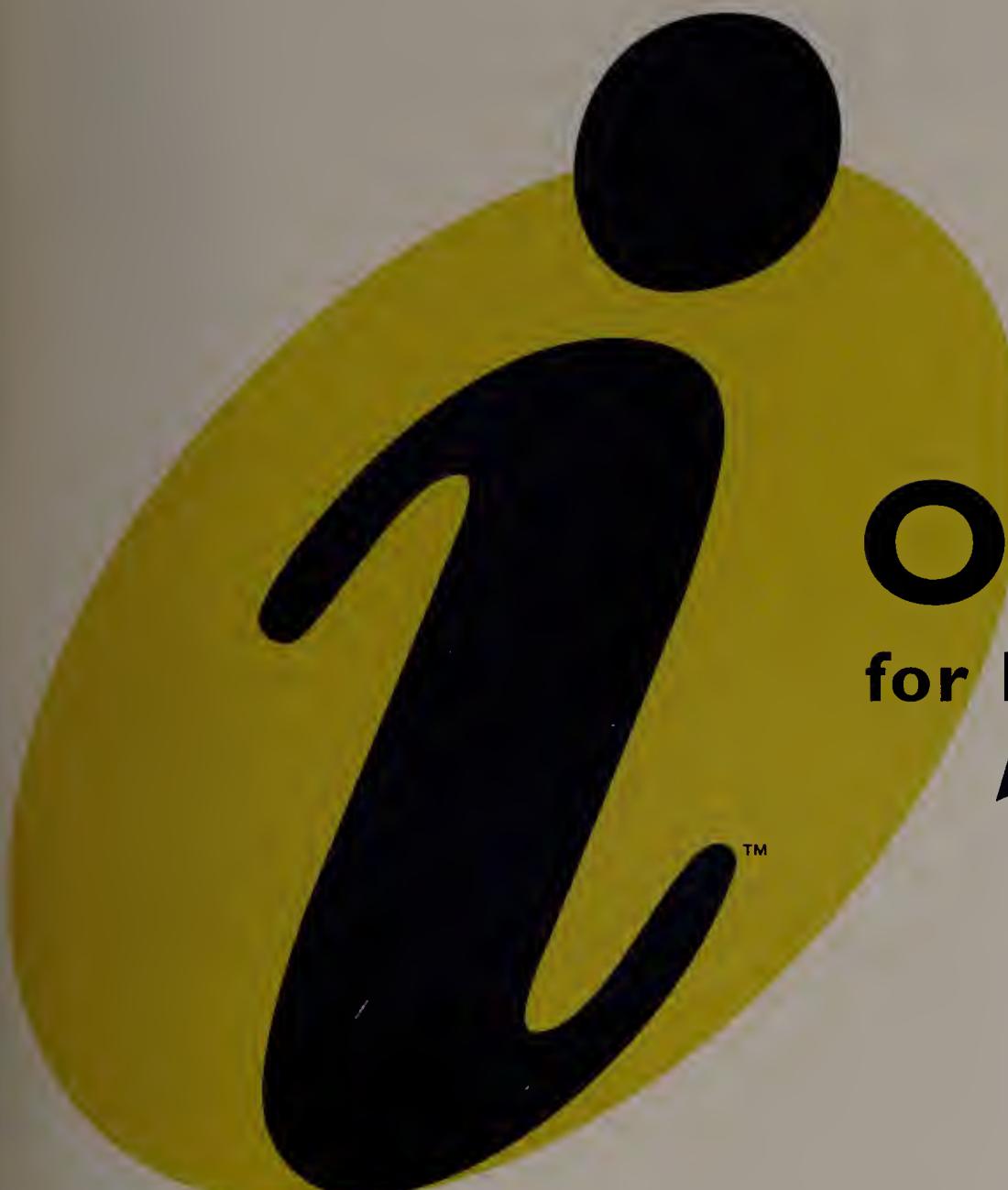
Mutual funds giant Fidelity Investments plans to lay off as many as 300 employees this year, cuts that could include further retrenchment of the Boston-based company's IS department, according to a *Wall Street Journal* report last week. Fidelity, in fact, has dismissed 47 IS staffers who were working on Vantage 2020, a five-year, \$350 million legacy system integration project. But those staff cuts were made because the project is nearly completed, said a company spokesman, who added that Fidelity expects to hire an additional 900 workers by year's end.



Wherfore art thou, Romeo?
The four swans that swim with the Swan Boats at Boston's Public Garden received a high-tech update this spring. The swans — Romeo, Juliette, Castor and Pollux — had pinhead-size microchips surgically implanted under their skin flaps. The chips from Avid Marketing in Norco, Calif., can hold up to 96 bytes of encrypted data and will help officials identify the swans in case of mishap or foul play. — Stewart Deck

BM employees in Austin, Texas, last week received E-mail with an ominous ending to a security FAQ list that explained gate closures, entrance procedures and traffic flow. The last item? "Q15: What happens if I fail to cooperate with these new security measures? A15: Adherence to the site's security requirements is a condition of employment. Failure to adhere could result in disciplinary action, up to and including termination. Selected security officers have been issued up to three bullets." Want to shoot us a tip on a news story? Call news editor Patricia Keefe at (508) 820-8183, or E-mail her at patricia_keefe@cw.com.

Introducing a new breed of UNIX servers for a new way of computing.



SCO UNIX Servers

Internet computing. It's about using the tools of the internet to revolutionize the way your enterprise does business. But it takes a supremely robust server operating system to make internet computing a reality. UNIX® technology has always been the power behind the internet. Now we've internet optimized the world's most popular Intel®-processor-based UNIX servers for business computing.

Optimized for Internet Computing



Leveraging the scalability, reliability, and interoperability critical for building the bulletproof internet, intranet, and extranet solutions that can propel your enterprise into the next millennium. Prove it to yourself. For your FREE* copy of SCO® OpenServer™ or SCO UnixWare® systems, check out our website today.

Or call 1-800-SCO-UNIX, Dept. 725.

www.sco.com/servers



SCO, The Santa Cruz Operation, the SCO logo, SCO OpenServer, UnixWare and the Optimized for Internet Computing icon are trademarks or registered trademarks of The Santa Cruz Operation, Inc. in the U.S.A. and other countries. UNIX is a registered trademark of The Open Group in the U.S.A. and other countries. All other brands and product names are or may be trademarks of, and are used to identify products or services of, their respective owners. The Santa Cruz Operation, Inc. reserves the right to change or modify any of the product or service specifications or features described herein without notice. This product summary is for express or implied warranties in this summary. ©1997 The Santa Cruz Operation, Inc. All Rights Reserved. *You may obtain, free of charge, a license to use the SCO products contained on the Free SCO UnixWare or Free SCO OpenServer CD-ROMs under the terms and conditions specified in the usage agreement. Use of the software is solely for educational and non-commercial purposes. The license to use this software is free, however there is a charge for the media, tax (if applicable), and shipping and handling. **FREE (internet optimized) SCO OpenServer license is coming soon. Check with your SCO representative for availability.

HERE'S THE ANSWER. WHAT'S THE QUESTION?

Since the way you use your network has changed dramatically, now is an excellent time to question its conventional design. Put simply, your rigid system isn't equipped to handle the fluid movement of intranet traffic, Internet access, and new applications that take advantage of both. Enter Adaptive Networking.

cornerstone technologies: Access, Switching, IP Services, and Network Management.

Q: • **WHAT ABOUT RELIABILITY?**
When your network goes down, so does productivity. Not to worry. Adaptive networks are inherently more

provides the powerful ability to visualize and analyze real-time traffic flow across your entire network. Intelligent agents monitor your network infrastructure, keeping your IT staff informed of changing conditions and often making adjustments as needed. What's more, Optivity includes analytical tools for capacity planning to help reduce budget surprises.

Q: • **WILL IT WORK WITH WHAT I'VE ALREADY GOT?**

Of course. It wouldn't be truly adaptive if it didn't. You can adopt this technology at your own pace in cost-justifiable increments. Adaptive Networking even makes our competitors' products smarter and faster. Good news, since you probably already own some.

Q: • **CAN IT GIVE MY BUSINESS A COMPETITIVE EDGE?**

Definitely. You can offer hot, new services and build closer links with customers and business partners. Should they need access to your corporate network from the Internet, you can offer secure virtual private network connections. Want to add voice-over-IP capabilities to link customers and service representatives from your Web site and reduce long-distance phone costs? Adaptive networks can do this and much more.

Q: • **WILL IT WORK WITH THE LATEST APPLICATIONS?**

Applications drive your network needs. That's why adaptive networks shift on the fly to match routing priorities to your applications. For example, financial transactions and video conferencing can take routing priority over e-mail packets and Web browsing.

ANY QUESTIONS?

If your network can't do all of this, it's time to start asking a few questions of your own. For a free strategy paper, visit www.baynetworks.com/adapt/a3 or call 1-800-8-BAYNET ext. 294. Adaptive Networking is exactly what your business needs. Without question.

Adaptive Networking

Q: • **ALL RIGHT, WHAT IS IT?**
Adaptive Networking is a set of products and cornerstone technologies that transition today's networks to the IP-optimized networks of tomorrow. The aim of Adaptive Networking is to build networks that are invisible to users, worry-free for network managers, and strategic for the business.

Q: • **WHAT DOES IT OFFER?**
Our philosophy is centered around more services with less complexity. How? Through transparent scalable technologies that ensure long-term, non-disruptive network evolution; drive operational productivity at every level of the organization; and adapt to changes in network usage and business requirements.

Q: • **WHAT ARE THOSE SCALABLE TECHNOLOGIES?**
Bay Networks products are being developed around industry-leading

reliable and scalable thanks to symmetric multiprocessing and a distributed architecture. In other words, there's no single point of failure to bring down your network. Moreover, the system automatically reroutes traffic as needed to avoid bottlenecks. And you can easily add to, change, and modify your network without disrupting users.

Q: • **HOW CAN I REDUCE NETWORK OWNERSHIP COSTS?**

Adaptive networks automatically find and configure new devices to save your IT staff considerable time. And thanks to our Autosensing Technology, the system determines which users have 10Mbps or 100Mbps capabilities, for example, and matches them with the bandwidth they need.

Q: • **HOW CAN WE AVOID SURPRISES?**

With Optivity®, your IT staff can proactively manage all the devices in your network as one cohesive system—even if it extends across the Internet. Optivity also



Bay Networks